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National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
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Seattle, WA 98115

Refer to:
2000/01495 (NLAA actions)
2000/01496 (LAA actions)

August 26, 2003

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Re: Endangered Species Act Section 7 Formal and Informal Consultation and Magnuson-Stevens Fishery and Conservation Management Act Essential Fish Habitat Consultation on the Effects of the USDA Forest Service and USDI Bureau of Land Management Ongoing and Proposed Actions for FY2003 to FY2013 in the North Fork John Day River Subbasin, Oregon.

Dear Ms. Wood, Mr. Blackwood, Mr. Henderson, Mr. Williams, and Ms. Welch:

Enclosed is a document prepared by NOAA's National Marine Fisheries Service (NOAA Fisheries) pursuant to section 7 of the Endangered Species Act (ESA) on the effects of United States Department of Agriculture (USDA) Forest Service and United States Department of the Interior (USDI) Bureau of Land Management (BLM) ongoing and proposed actions administered by the Umatilla, Wallowa-Whitman, and Malheur National Forests and the Vale District of the BLM in the North Fork John Day River Subbasin, Oregon. NOAA Fisheries concludes



in the biological opinion included in this document that the proposed actions are not likely to jeopardize Middle Columbia River (MCR) steelhead (*Oncorhynchus mykiss*). As required by section 7 of the ESA, NOAA Fisheries also included reasonable and prudent measures with non-discretionary terms and conditions that NOAA Fisheries believes are reasonable and appropriate to minimize the impact of incidental take associated with these actions.

During formal consultation, the Umatilla National Forest requested that several actions be removed from the BA. These included the issuance of special use permits for maintenance of the Pete Mann ditch system and operation of the Smith Ditch. The Umatilla National Forest had determined that these actions were “likely to adversely affect” (LAA) MCR steelhead and could result in take of this species. NOAA Fisheries recommends that formal consultation be initiated as soon as possible so that take of MCR steelhead caused by these actions can be avoided or minimized and the Umatilla National Forest can receive an incidental take statement for these actions.

This document also serves as consultation on essential fish habitat (EFH) pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act and implementing regulations at 50 CFR Part 600. The North Fork John Day River Subbasin has been designated as EFH for chinook salmon (*Oncorhynchus tshawytscha*).

If you have any questions regarding this consultation please contact Eric Murray of my staff in the Oregon Habitat Branch, at 541.975.1835 ext. 222.

Sincerely,

Michael R. Crouse

D. Robert Lohn
Regional Administrator

cc: Katherine Ramsey, UNF
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Endangered Species Act - Section 7 Consultation Biological Opinion

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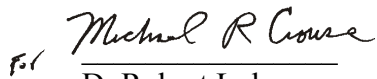
Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation

USDA Forest Service and USDI Bureau of Land Management Ongoing and Proposed Actions
for FY 2003-2013 in the North Fork John Day River Subbasin, Oregon

Agency: USDA Forest Service
USDI Bureau of Land Management

Consultation
Conducted By: NOAA's National Marine Fisheries Service,
Northwest Region

Date Issued: August 26, 2003

Issued by: 
D. Robert Lohn
Regional Administrator

Refer to: 2000/01495 (NLAA actions)
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1. INTRODUCTION

1.1 Consultation History

On January 5, 2000, NOAA's National Marine Fisheries Service (NOAA Fisheries) received a letter from the Umatilla National Forest (UNF) requesting consultation regarding the potential effects of ongoing and proposed activities on the UNF, Wallow-Whitman National Forest (WWNF), Malheur National Forest (MNF), and Baker Resource Area of the Vale District of the Bureau of Land Management (Vale BLM) in the North Fork John Day River (NFJDR) subbasin on Middle Columbia River (MCR) steelhead (*Oncorhynchus mykiss*). The accompanying biological assessment (BA), prepared jointly by the UNF, WWNF, MNF, and Vale BLM, described ongoing and proposed actions in the NFJDR subbasin, the environmental baseline, and the potential effects of those actions on MCR steelhead in the NFJDR subbasin.

Some of the actions requiring consultation involved applicants. The UNF identified mining activities covered in the BA to be of the highest priority. Due to the involvement of applicants and a pending lawsuit, the mining activities were addressed in a separate biological opinion dated July 25, 2002 (refer to: 2000/01459). The City of Granite water supply was also consulted on separately and was addressed in a letter of concurrence dated February 8, 2002 (refer to: 1999/01876). The actions addressed in these consultations are considered in the environmental baseline of this consultation.

After completing consultation on these activities, NOAA Fisheries and the UNF met on June 5, 2002, to discuss concluding consultation on the remaining activities. NOAA Fisheries and the UNF met again on August 14, 2002. At this time, the UNF provided information on the status of ongoing activities and agreed to provide additional information regarding these activities.

During consultation, the UNF and NOAA Fisheries worked together to develop additional conservation measures for water drafting. On December 3, 2002, the UNF adopted additional conservation measures, beyond what was proposed in the BA, to reduce the likelihood that this activity would result in adverse effects to MCR steelhead.

On February 25, 2003, the Prineville BLM notified NOAA Fisheries that they had assumed administration of the land and actions in the NFJDR formally under jurisdiction of the Vale BLM. Specifically, the actions affected in this consultation include the administration of grazing leases 6532, 6549, and 6569. The Prineville BLM has suspended grazing on these allotments until an allotment management plan is developed for these leases. Currently, there is no proposed action for these leases and no further action is planned until 2005 or 2006 (J. Morris, Prineville BLM, pers. comm.). The Prineville BLM will initiate consultation when a proposed action has been developed for these grazing leases.

The UNF provided additional information on March 10, 2003, regarding the status of proposed and ongoing actions. Projects presented in the BA that have been completed or were cancelled will not be addressed in this consultation. Specifically, the FG Whitney private land term

grazing allotment, the Pearson unit of the Texas Bar grazing allotment, and the Granite/Clear Creek Floodplain Restoration project were removed from consultation. The Granite/Clear Creek Floodplain Restoration project was completed, the FG Whitney private land term grazing permit was cancelled, and the Pearson unit of the Texas Bar allotment will be rested to allow for additional recovery from the Tower Fire of 1996. Livestock grazing on the Trout Meadows allotment was discontinued due to concern over negative effects grazing on this allotment may have to MCR steelhead. The UNF also clarified that it was seeking consultation on the remaining ongoing and proposed activities for the 10-year period from FY2003 to FY2013.

On April 10, 2003, the MNF provided additional information to NOAA Fisheries in the form of an amendment to the BA. The amendment addressed several grazing allotments administered by the MNF that failed to meet utilization standards in 2002. New proposed actions, designed to improve conditions in the riparian areas of these allotments, were included in the BA amendment. The effects determination for livestock grazing on the Hamilton allotment was also revised from not likely to adversely affect to likely to adversely affect. The MNF is seeking consultation for the allotments they administer for 2003 only. For subsequent years, the MNF will consult on these allotments in conjunction with other allotments they administer in the Middle Fork and Upper John Day River subbasins.

NOAA Fisheries met with the UNF on May 21, 2003, to discuss effects of livestock grazing on the Ditch Creek allotment. At this meeting, UNF provided additional information including environmental baseline information and further explanation of the effects analysis for this activity.

On June 17, 2003, the WWNF provided an updated proposed action description for the ongoing noxious weed treatment program in the Granite Creek watershed. Incorporated into the new action were additional conservation measures designed to prevent herbicides from reaching the water.

The MCR steelhead was listed as threatened under the Endangered Species Act (ESA) by NOAA Fisheries on March 25, 1999 (64 FR 14517). NOAA Fisheries applied protective regulations to MCR steelhead under section 4(d) of the ESA on July 10, 2000 (65 FR 42422).

The UNF, WWNF, and MNF reviewed proposed action descriptions during development of this Opinion to ensure that the large number of activities submitted for consultation were adequately addressed. On August 13, 2003, the UNF reviewed a draft of this Opinion.

The objective of this Opinion is to determine whether the proposed and ongoing actions during FY2003-2013 are likely to jeopardize the continued existence of MCR steelhead. The objective of EFH consultation is to determine whether the proposed action may adversely affect designated EFH for relevant species, and to recommend conservation measures to avoid, minimize, or otherwise offset potential adverse effects to EFH resulting from the proposed action.

1.2 Proposed Action

The BA, with addendums, submitted to NOAA Fisheries described all of the ongoing and proposed actions administered by the UNF and WWNF in the NFJDR subbasin. These actions occur on Forest Service land in several watersheds of the NFJDR subbasin. The names and the last two digits of Forest Service 5th field Hydrologic Unit Code (HUC) reference numbers are listed in Table 1.

Table 1. NFJDR Subbasin Watersheds and 5th Field HUC with Proposed Forest Service Actions

Watershed Name	5 th Field HUC
Upper Cottonwood Creek	08
Lower Cottonwood Creek	09
Deer Creek	11
NFJDR/ Cupper Canyon	23
Wall Creek	24
Little Wall Creek	25
Skookum Creek	26
Mallory Creek	27
Potamus Creek	28
NFJDR/ Matlock Creek	29
Fivemile Creek	30
Deerlick Creek	31
Owens Creek	32
Cable Creek	33
Bridge Creek/ Pine Creek	34
NFJDR	35
Desolation Creek	36
Meadow Brook	37
Granite Creek	93
Upper NFJDR	94
Big Creek	95

Watershed Name	5 th Field HUC
Hidaway Creek	96
Upper Camas Creek	97

The proposed and ongoing actions, location of the actions in the subbasin, and effects determination made by the UNF are summarized in Table 2. All of the actions addressed in this Opinion have been fully described in the BA, which is hereby incorporated by reference. A brief description of these activities follows.

The UNF, WWNF, MNF, have determined that some of the actions included in the BA are “not likely to adverse affect” (NLAA) MCR steelhead and other actions are “likely to adversely affect” (LAA) MCR steelhead. The NLAA actions are expected to have insignificant, discountable, or beneficial effects MCR steelhead and their habitat. This document will serve as NOAA Fisheries concurrence on the NLAA actions with concurrence based on the information provided in the BA and developed during consultation with the UNF, MNF, and WWNF. The effects of the NLAA actions will not be analyzed in the same detail as the effects of the LAA actions. The BA also provided a collective analysis of effect for all proposed and ongoing actions in the NFJDR subbasin.

Table 2. The Proposed and Ongoing Actions, Location of the Actions in the NFJDR Subbasin, and Effects Determination for MCR Steelhead Made by the UNF

Proposed or Ongoing Activity	Location (5 th Field HUC)	Effects Determination for MCR steelhead
Forest Engineering		
road maintenance	all except 9,11	NLAA
water sources for forest activities	all except 8,9,11	NLAA
bridge replacement	94	LAA
Fire Management		
Fire Camps (outside RHCAs)	29,30,33,34,36,37,93,94,95,96, 97	NLAA
Fire Camps (inside RHCA)	30,33,35,36,37,93,94,95,97	NLAA/LAA

Proposed or Ongoing Activity	Location (5 th Field HUC)	Effects Determination for MCR steelhead
Forest Management		
genetics program	all	NLAA
reforestation	8,26,27,28,32,33,34,35,93, 97	NLAA
prescribed burning (harvest units)	8,26,27,28,32,93,97	NLAA
prescribed burning (underburning)	24,26,30,31,32,34,35,36,93,96, 97	NLAA
prescribed burning (parallel units)	29	NLAA
timber stand improvement	all except 8,9,11,23,31	NLAA
special use forest products	all	NLAA
Mallory commercial thin	27,28	NLAA
Bull Run North timber stand improvement	93	NLAA
Crane Flats post and pole sale	94	
Habitat Improvement and Monitoring		
stream surveys	all	NLAA
maintenance of aspen fencing	27,28,29,30,31,36,36, 93	NLAA
collection of aspen material	all	NLAA
other aspen restoration activities	27,28	NLAA
shrub enhancement & exclosure	35	NLAA
Bull Run headcut repair	93	LAA
effects of Tower Fire on fish populations study	33,35,36	NLAA
Livestock Grazing Allotments		
Camp Creek	93	NLAA
Central Desolation	35,36,37	NLAA
Cooper Creek	32	NLAA
Cunningham	97	NLAA
Deer Creek	11	NLAA
Ditch Creek	26,27,28	NLAA
Donaldson	8	NLAA

Proposed or Ongoing Activity	Location (5th Field HUC)	Effects Determination for MCR steelhead
FG Whitney	28-32	NLAA
Fox	8	NLAA
Hamilton	11	LAA
Hardman	24,25	NLAA
Hidaway	33,96,97	NLAA
Hutchinson on-off	32	NLAA
Indian Creek (MNF)	8	NLAA
Indian Creek (UNF)	35,36,37,93	NLAA
King on-off	4	NLAA
Klondike	97	NLAA
Little Wall	24,25,26	NLAA
Lucky Strike	32,97	NLAA
Matlock	28-31	NLAA
McDonald Spring on-off	32	NLAA
Ridge	8	NLAA
Swale Creek	26,27	NLAA
Tamarack/ Monument	23,24	NLAA
Texas Bar	33,34,35,95,96	LAA
Thompson Flat	28,29	NLAA
Western Desolation	29,37	NLAA
Noxious Weeds		
weed management	93	NLAA
Recreation Management and Special Use Permits (SUP)		
campground and trailhead maintenance	24,25,26,27,28,29,30,33,34,35,36,93,94,95,97	NLAA
trail maintenance	24,26,27,28,32,33,35,36,93,94,95,96,97	NLAA
Arbogast SUP	37	NLAA
Bluewood SUP	24	NLAA

Proposed or Ongoing Activity	Location (5th Field HUC)	Effects Determination for MCR steelhead
Columbia Basin Elec, Coop. SUP	26	NLAA
Ferguson SUP	37	NLAA
Fitzgerald SUP	24	NLAA
Greenhorn Water District SUP	93	NLAA
Indian Creek C&H SUP	36	NLAA
Lake Penland SUP	27	NLAA
mushroom buyers SUP	all	NLAA
Oregon State Forestry SUP	26	NLAA
Pearson rec. summer homes SUP	33, 35	NLAA
power lines SUP	37,93,93,93	NLAA
telephone utilities SUP	24,26	NLAA
Ward SUP	37	NLAA
Big Creek Meadows Camp/Trailhead and Adjacent Meadow Area Improvements	95	NLAA
Drift Fence Campground improvements	34	NLAA
Moon Meadows trailhead improvements	95	NLAA
Oriental Creek Campground improvements	35	NLAA
cabin rentals	33,93,97	NLAA
Frazier Summer Homes SUP	97	LAA
Blue Mountain OHV Trail	94,95	NLAA
Miscellaneous Project		
private property access	93	NLAA
Dale Work Center	36,37	NLAA
Frazier Helibase and Guard Station	97	NLAA
Bull Prairie admin. site building disposal	24	NLAA

1.2.1 Forest Engineering

Road Maintenance (NLAA)

The UNF and WWNF propose to carry out road maintenance activities on all Forest Service land in the NFJDR subbasin. The purpose of the proposed action is to meet road management objectives, prevent resource damage, and ensure safe travel conditions for Forest users. The UNF and WWNF have included specific design criteria and protective measures to prevent incidental take of MCR steelhead or adverse impacts to their habitat that could occur as a result of the proposed action. A brief description of road maintenance activities follows.

Road reshaping occurs to remove irregularities of the road surface such as pot holes, rills, and ruts. This prevents concentration of runoff and potential mobilization of road materials into ditches and streams. Blading of roads involves redistributing road surface materials such as gravel, to an even level using heavy machinery. Several design criteria, included in the BA project description, ensure incidental take of MCR steelhead or degradation of its habitat will not occur as a result of this activity. Side cast of material will not occur where this material could be directly or indirectly introduced into a stream, or where placement of this material could destabilize a slope. Slough material will be deposited in a upland disposal site, or if needed, it will be used in efforts to repair damaged cutbanks.

Drainage structure maintenance includes opening plugged culverts, adding water bars to road surfaces, adding ditch relief culverts, repairing damaged ditch relief culverts, and cleaning drainage structures. These activities are not expected to generate sediment that will enter local streams. Culverts replacements and removals in Riparian Habitat Conservation Areas¹ (RHCAs), be consulted on separately.

Maintenance of signs may include straightening rock baskets and sign posts, cleaning the sign surface, and removing small amounts of vegetation to ensure visibility of the sign. Construction of new signs would involve assembling rock baskets or digging holes for sign posts. These activities may occur in RHCAs but the chance of these activities generating any effects to MCR steelhead or their habitat is extremely small.

Road maintenance requires felling of hazard trees that pose a risk to public safety on open roads be felled. Hazard trees felled in RHCAs will be left onsite. Cutting and harvest of hazard trees may occur in commercial and non-commercial operations.

¹ Riparian Habitat Conservation Area (RHCA) - Portions of watersheds where riparian dependent resources receive primary emphasis, and management activities are subject to specific standards and guidelines. RHCAs include traditional riparian corridors, wetlands, intermittent headwater streams, and other areas where proper ecological functioning is crucial to maintenance of the stream's water, sediment, woody debris and nutrient delivery systems. (U.S.D.A. and U.S.D.I 1994)

Logging out is the removal and disposal of trees, logs, and debris that have fallen across the road bed or travel path. Trees and logs within the travel way and turnouts are cut, limbed, and moved out of the road and ditch areas. Any portion of a tree that has fallen in an RHCA will be moved out of the travel way and left onsite. Any portion of a tree which has fallen into a stream will be left to provide LWD. It is expected that this activity will have a negligible or beneficial effect on MCR steelhead or their habitat.

Roadside brushing is performed to provide visibility, safe stopping distance, and clearance for vehicles. Roadside brushing of vegetation in RHCAs and within ditches that transport water directly into streams will be consulted on separately. For this reason, it is not expected that this activity will have any adverse impacts to MCR steelhead or their habitat.

During the summer months, some roads will receive dust abatement treatments. The application of water, lignon sulfonate, or magnesium chloride will occur to control dust on heavily used roads. No application of dust abatement chemicals will occur on roads within RHCAs.

Removal of snow on forest roads is needed to ensure safe driving conditions and prevent erosion damage. All equipment used to remove snow will be equipped with shoes or runners to leave at least 2 inches of snow on the road surface. Snow berms will be opened to prevent accumulation of run-off during snow melt. These protective measures are designed to minimize the introduction of sediment into streams as a result of snow removal activities.

Road closure actions will include installation of devices to restrict vehicle traffic on roads designated for closure, signing, and disguising road entrances. These closure activities may occur in RHCAs but are not expected to result in any adverse effects to MCR steelhead or their habitat.

Decommissioning of roads may involve removal of ditch relief culverts and installation of water bars. Minor scarification of compacted soils and reseeding or planting will occur in some road decommissioning. The UNF and WWNF will also consult separately on road decommissioning projects on roads located in RHCAs. Complete obliteration of roads will be consulted on separately on a case by case basis.

The cleaning of cattle guards occurs to remove sediment and debris that has accumulated under the structure. This activity most often requires a backhoe. If necessary, a drainage ditch or culvert will be installed to ensure proper drainage of the structure. Cattle guard maintenance will be conducted in a manner that ensures sediment generated from this activity will not reach streams.

The UNF and WWNF have determined that the road maintenance activities in the NFJDR subbasin are NLAA MCR steelhead. This determination is based on the fact that protective measures have been incorporated into road maintenance activities to prevent sediment generated from these activities from reaching streams. In addition, chemical such as dust abatement agents are not used in areas where they can easily reach streams. Removal of hazard trees will not

occur in RHCAs, while felling of hazard trees in RHCAs will most likely lead to more large woody debris in streams, a beneficial effect for MCR steelhead.

Water Sources for Forest Activities (NLAA)

The UNF identified in the BA, locations and criteria for water withdrawal for fire suppression and road maintenance activities. The BA provides a list of locations where water is withdrawn from streams for these activities. The majority of these streams provide spawning, rearing, or migratory habitat for MCR steelhead. The UNF has included as a part of their activity description the NOAA Fisheries' developed screening criteria and will the criteria jointly developed by the UNF and NOAA Fisheries for water withdrawal rates in these streams. Additional conservation measures include: (1) Not pumping water from areas where spawning steelhead are present or redds are known or suspected to be located; (2) pumping equipment size, operation, and drafting rates will be adjusted depending on the stream flow present at the time of drafting; (3) large streams will be used for the majority of drafting; and (4) during low flow conditions, withdrawals for a single site will be limited to 18,000 gallons per day. Water drafting associated with emergency fire suppression will be addressed future emergency ESA section 7 consultations.

Bridge Replacement (LAA)

The WWNF proposes to replace a bridge on Forest road 7300 at milepost 25.8. The bridge is near the junction of Forest road 52 and the NFJDR campground. The existing bridge is made of pressure treated wood and there is concern that the bridge may fail in the near future. The proposed bridge would be made of concrete and would allow for more natural stream morphology at the site. The dimensions of the new full span bridge would be approximately 70 feet long by 30 feet wide.

During construction of the new bridge, a temporary crossing would need to be established. A one lane pattern of traffic would be maintained during the construction to minimize the impact of the temporary crossing structure. Construction of the bridge will occur during the ODFW in-water work window (July 15 to August 15 for this area) to minimize impacts to spawning MCR steelhead. The removal of the existing bridge structure will be accomplished using controlled dismantling techniques to minimize the amount of material entering the stream channel. Methods of erosion control such as straw bales, silt fences, and bog mats will be used to minimize the amount of sediment reaching the NFJDR.

Due to the potential for sediment introduction and harassment of juvenile MCR steelhead during the replacement of the bridge, the WWNF has determined that this activity is LAA MCR steelhead.

1.2.2 Fire Management

Fire Camps Outside of RHCAs (NLAA)

During wildfires, the UNF establishes fire camps to support suppression efforts. These pre-designated sites consist of personal tent areas, sanitary facilities, food facilities, re-fueling facilities, and various support tents including medical, planning, and communication. During wildfire suppression efforts, these sites may be occupied by 60 to 2,000 or more people. Some compaction of soil and ground disturbance occurs due to operation of vehicles and machinery and the large amount of human activity. The UNF routinely uses dust abatement chemicals such as magnesium chloride at the fire camps.

Many of these sites, 34 in total, are outside of RHCAs. A complete list of these sites and their location is provided in the BA. The UNF has planned protective measures for the operation of fire camps in an effort to preserve forest resources. Spill response plans are developed for each of these sites. Burned Area Emergency Rehabilitation (BAER) efforts often include restoration at fire camps. The UNF has determined that activities at fire camps outside of RHCAs are NLAA MCR steelhead. This determination is based on the fact that any accidentally spilled chemicals, sediment generated from ground disturbance, and dust abatement chemicals are unlikely to reach streams, thereby not adversely affecting MCR steelhead or their habitat. In addition, no disturbance of MCR steelhead adults or juveniles will occur, and riparian habitat will not be disturbed.

Fire Camps Inside RHCAs (NLAA & LAA)

Eighteen fire camp sites are in RHCAs. With the exception of the Granite Creek, Clear Creek, and Dixon Bar sites, the fire camps are approximately two hundred feet from streams. For fire camps in RHCAs, minimal disturbance of riparian vegetation beside the stream occurs. Compaction of soil in riparian areas occurs due to the use of vehicles, machinery, and from human activities.

The UNF has planned protective measures for the operation of fire camps in RHCAs in an effort to preserve riparian resources. No crossing of the stream is allowed by vehicles and if personnel need to cross the stream regularly, a temporary foot bridge is installed. Spill plans are developed and implemented by the UNF for each of these sites. The post-fire BAER efforts often include restoration at fire camps.

The UNF has determined that activities in fire camps in RHCAs of non-fish-bearing streams is NLAA MCR steelhead. This determination is based on the fact that harassment of MCR steelhead adults and juveniles will not occur, riparian vegetation will not be removed, and stream channel conditions will remain unchanged. Spill plans will ensure that the chance of chemical contaminants reaching streams is negligible. Effects to areas downstream, where fish may be present, are not expected to occur.

The UNF has determined that activities in fire camps in the RHCAs of fish-bearing streams is LAA MCR steelhead. This determination is largely based on the chance of the large amount of

human activities resulting in harassment of juvenile, and potentially adult, MCR steelhead. Activities in fire camps typically last a few days to several weeks. However, in most years, no activity will take place at these sites. If emergency fire suppression situations require activities at fire camps beyond the scope of those addressed in this Opinion, the UNF will initiate emergency ESA consultation.

1.2.3 Forest Management

Genetics Program (NLAA)

The UNF's ongoing genetics program is designed to provide tree seedlings and seeds for silvicultural and reforestation activities. This program has two primary components: (1) Collecting vegetative material, and (2) operating a seed orchard and plantations. Vegetative collections occur throughout the subbasin and involve collecting various plant parts for propagation. Due to the small amount of material collected, it is not expected this activity would have any adverse effects to MCR steelhead or their habitat.

The UNF operates three plantations and one seed orchard in the NFJDR subbasin. Operation of the Dugout Seed Orchard, in the Camas Creek watershed, involves maintaining fences, mowing vegetation, tilling soils, planting trees, and treating the area with chemical herbicides. The orchard is approximately 0.75 miles from the closest perennial stream, Camas Creek. Hexazinone is used to control unwanted vegetation at the orchard. This chemical is applied with an ATV (all terrain vehicle) mounted with a sprayer and tank. Application of this herbicide is limited to dry periods.

The three plantations are in the following watersheds: NFJDR/ Matlock, Fivemile, and Deerlick. Activities at these sites include maintaining fences, tree planting, and treating unwanted vegetation with chemical herbicides. Pronone-25, a granular formulation of hexazinone, is spread by a hand applicator in a circle four feet in diameter around tree seedlings. Application of herbicides is limited to dry periods. No perennial streams or RHCAs are near the plantations. The UNF has determined that genetics program activities are NLAA MCR steelhead.

Reforestation (NLAA)

The UNF has reforestation activities ongoing and proposed at various locations in the NFJDR subbasin. These sites vary in size from 4 acres to 199 acres. Activities occurring at these sites include mechanical or manual site preparation and tree planting.

Mechanical site preparation involves using heavy machinery such as a "slashbuster" to breakup or shred unwanted logging debris or undesirable seedlings. This activity is limited to times when soils are dry. Areas that are treated with this method often receive prescribed fire shortly after the treatment is completed. Manual site preparation involves cutting logging slash and undesirable tree seedlings with a chainsaw. This material is scattered and the area in most cases is treated with prescribed fire. Mechanical and manual site preparation will not occur in RHCAs.

Tree planting typically occurs in areas that have been harvested for timber or areas burned by wildfire. Planting is done by hand or with an auger. In both cases, soil disturbance is minimal with little or no chance for sediment generated from this activity reaching nearby streams. Planted trees are sometimes protected with plastic vexar tubing to prevent damage from animals. Some ATV use is required for this activity but their use is limited to closed roads. Tree planting occurs in RHCAs.

The UNF has determined that reforestation and planting activities are NLAA MCR steelhead. Very minimal ground disturbance is associated with these activities and operation of heavy machinery does not occur in RHCAs.

Prescribed Burning (NLAA)

Prescribed burning occurs in various watersheds in the NFJDR subbasin and falls into two general categories, activity burns and underburning. Activity burns are conducted in areas where logging activities have generated slash and other debris that could provide fuel for a wildfire. Prescribed fire is used to reduce fuel levels and prepare these sites for reforestation. Activities included in the prescribed fire process include construction of firelines, water drafting (as described above), and ignition of fire with various methods. Firelines will be rehabilitated to prevent sediment from being mobilized and transported to watercourses. Due to the fact that timber sales have not occurred recently in RHCAs, activity burns will not occur in RHCAs.

The second general category of prescribed fire is underburning. According to the BA, the purpose of the underburning program on the UNF is to reduce hazardous fuel levels through the implementation of a program of low intensity underburns. The prescriptions for underburning are designed to leave a portion of the duff soil layer and thus prevent the mobilization of sediment after burning has been completed. Generally, roads are used as fire breaks and there is no fireline construction required for underburning. Water drafting is also required for underburning and will follow the guidelines described in the road maintenance section, above. A detailed list of the areas planned for underburning are provided in the BA. Most watersheds listed in Table 1 have some underburning planned. Underburning will not involve ignition of fire within RHCAs, however, fire may be allowed to back into RHCAs. The amount of material actually consumed by fire that has backed into RHCAs will depend on vegetation type and fuel moisture content.

The UNF has determined that prescribed fire activities are NLAA MCR steelhead. Prescribed burning is not expected to have adverse effects to MCR steelhead habitat components. Although some fire will be allowed to back into riparian areas, high moisture levels in these areas are expected to prevent consumption of significant amounts of riparian vegetation. The shade production and sediment filtering capacity of these riparian vegetation communities are expected to remain intact. Therefore, sediment generated by the prescribed fire is not expected to reach streams.

Timber Stand Improvement (NLAA)

The UNF has ongoing or planned pre-commercial thinning operations at various locations throughout the NFJDR subbasin. These operations involve thinning overstocked stands of trees (primarily lodgepole pine) by cutting trees less than nine inches in diameter with a chainsaw. Thinning operations will occur primarily on those sites disturbed by recent human activities such as logging and underburning. Pre-commercial thinning is planned for the RHCAs of intermittent streams and the outer edge of RHCAs of perennial streams. Thinning in RHCAs will leave approximately 681 trees per acre and thinning outside RHCAs will leave approximately 134 to 222 trees per acre. The locations of thinning operation both inside and outside of RHCAs is listed in the BA on page III C-35 to III C-39. Thinning in RHCAs will remove small trees, those a few inches in diameter, while leaving larger, shade providing trees intact. The UNF has determined that timber stand improvement activities are NLAA MCR steelhead. Although activity will occur in RHCAs, no ground disturbance will take place, no timber harvesting equipment will be used and no sediment will be generated by the proposed activity. Stream shading is typically achieved in one site potential tree height (FEMAT 1993) and the removal of small trees in the outer edge of RHCAs will not appreciably reduce shade to streams.

Special Use Forest Products (NLAA)

Permits are issued by the UNF to the public for the removal of certain forest products including lodgepole pines to be used for post and poles, Christmas trees, firewood, and mushrooms. The UNF has minimized the impacts these activities will have on MCR steelhead habitat by not allowing the cutting or removal of trees in RHCAs, restricting use of roads to dry periods, and patrolling areas of use for compliance. Due to the fact that activities are not allowed in riparian areas, the UNF has determined that issuing permits for forest products is NLAA MCR steelhead.

Mallory Commercial Thin (NLAA)

This proposed timber sale will occur in the Potamus and Mallory watersheds. Live and dead ponderosa pines and other mixed conifer species will be commercially harvested with tractors and harvester/forwarders. The proposed harvest units encompass 1,028 acres, with approximately 2.9 million board feet (MMBF) of timber planned for removal. The average size of trees to be removed is 8 to 14 inches diameter at breast height (dbh). No live trees over 21 inches dbh will be removed. No harvest of trees will occur in RHCAs. No new road construction will occur. After the harvest is complete, prescribed fire will be used within the harvest units to eliminate slash and reduce fuel levels. Subsoiling of landings and other areas of soil compaction will occur. Closure and obliteration of 1.2 miles of Forest road 2104031 will occur as part of this timber sale. Twenty other closed roads will have closure improvements, such as installing barricades, to discourage unauthorized use by the public. The UNF has determined that this proposed timber sale will not adversely affect MCR steelhead. This determination is based on the fact that timber sale activities are not expected to have an effect on riparian habitat components, change peak/ base flows, or introduce sediment into local streams.

Bull Run North Timber Stand Improvement (NLAA)

This ongoing non-commercial thinning project is in the Granite Creek watershed, beside the town of Granite. This project involves cutting of small trees in an effort to return stands to

historical conditions and reduce wildfire hazard. No thinning of trees in RHCAs will occur. The WWNF has determined that this project is NLAA MCR steelhead because activities will not occur near streams, and riparian habitat will not be affected by the thinning.

Crane Flats Post and Pole Sale (NLAA)

This ongoing project involves harvesting small live and dead trees from over-stocked stands along Forest Roads 7335 and 7340. Only trees less than six inches dbh and dead trees less than eight inches dbh will be cut. All work will be done with chainsaws and hand tools, no ground disturbance will be required. No cutting of trees will occur in RHCAs. The WWNF has determined that this activity is NLAA MCR steelhead.

1.2.4 Habitat Improvement and Monitoring

Stream Surveys (NLAA)

Stream surveys are conducted to collect information on stream and habitat conditions in the NFJDR subbasin. Stream surveys are planned for 20 to 40 stream miles each year and follow Forest Service Region Hankin and Reeves protocol. Survey crews walk along or in streams and collect water quality, hydrologic data. The UNF and WWNF have obtained ESA section 10 permits for take of MCR steelhead that may occur as a result of these activities. The UNF also operates gauging stations and temperature sites at various locations in the subbasin. The UNF and WWNF has determined this activity will not result in any adverse effects on MCR steelhead habitat or adverse effects beyond those covered by the section 10 permit.

Aspen Restoration (NLAA)

Fire suppression, browsing by wildlife and livestock, and other factors have led to a decline in the condition of aspen stands in the NFJDR subbasin. The UNF has proposed or is conducting ongoing aspen restoration projects at various locations. These projects include various activities including aspen planting, construction of exclosure structures, and felling of encroaching conifers. Some ATV use will be necessary to access the project sites. Many of the sites where these activities will occur are in RHCAs, but sediment generated from the activities will be minimal and the chance of this sediment reaching streams is very small. For these reasons, the UNF has determined this activity to be NLAA MCR steelhead.

Shrub Enhancement and Exclosures (NLAA)

The UNF is conducting ongoing shrub enhancement and exclosure projects in the NFJDR watershed. The purpose of this project is to improve the condition of riparian hardwood shrub communities along streams in this watershed. Building exclosure structures involves constructing a fence around shrubs to protect them from browsing by wild ungulates. Enhancement of shrubs involves mechanical disturbance and partial burial of young shrubs to mimic the action of annual flooding of riparian areas. A very small amount of sediment may be generated by these activities, however, it is not expected to result in a measurable increase in stream turbidity. For this reason, the UNF has determined this project to be NLAA MCR steelhead.

Bull Run Headcut Repair (LAA)

The WWNF is proposing a project to repair a headcut in Bull Run Creek that has resulted from historic mining activity. Bull Run Creek is part of the Granite Creek watershed. The headcut has been migrating upstream and is approaching the Haystack Meadow area, causing a variety of adverse impacts to the riparian area of Bull Run Creek. The proposed project would involve using an excavator to place rock, ranging from cobble to boulder size, in the downcut portion of the stream channel. The excavator may have to cross the channel once to complete the project. The WWNF will place logs in the channel at this crossing to prevent bank damage from construction activities. Other protective measures include the use of sediment control measures to minimize the amount of sediment that may reach Bull Run Creek, and scheduling all instream operation of heavy equipment during the Oregon Department of Fish and Wildlife in-water work window for the area (July 15 - August 15). It is expected that this project will result in harassment of rearing juvenile MCR steelhead and some minor, short-term negative impacts to their habitat. Arresting the headcut should provide a long-term benefit to MCR steelhead by facilitating the recovery of the riparian area of Bull Run Creek. Due to the potential for take of MCR steelhead during the instream work, the WWNF has determined this activity to be LAA MCR steelhead.

Effects of Tower Fire on Fish Population Study (NLAA)

The UNF is carrying out ongoing research on the effects of the Tower Fire (1996) on the fish populations and habitat of the areas affected by the fire. This study is occurring in the Desolation Creek, NFJDR, and Cable Creek watersheds. The ongoing activities include electroshocking and habitat surveys. The direct take of MCR steelhead associated with this research is covered by a ESA section 10 permit. The UNF has determined that the other activities associated with this research are NLAA MCR steelhead or their habitat.

1.2.5 Livestock Grazing

Grazing Allotments

The UNF administers 21 livestock grazing allotments in the NFJDR subbasin, three of which have been determined to be LAA MCR steelhead. The WWNF administers a portion of one allotment in the NFJDR subbasin which has been determined to be NLAA MCR steelhead. The MNF administers seven grazing allotments, all of which have been determined to be NLAA MCR steelhead. Information about these allotments is summarized in Table 3.

Management of many of these allotments was altered in response to the issuance of the Interim Strategies for Managing Anadromous Fish-producing Watersheds in Eastern Oregon and Washington, Idaho, and Portions of California (PACFISH) (USDA and USDI 1995). Allotment use dates and unit rotations were altered to avoid impacts to spawning anadromous salmonids. The Interagency Implementation Team's (IIT) grazing monitoring module established guidelines and protocols to be used to assess the impacts of livestock grazing on riparian management

objects (RMOs).² In response to concerns over impacts of livestock grazing on the health of riparian areas, the UNF has fenced many riparian areas to exclude cattle.

On April 11 and April 15, 2003, NOAA Fisheries conducted site visits to Klondike, Lucky Strike, Cunningham, Ditch Creek, Swale Creek, and Thompson Flat allotments. Utilization from the previous grazing season appeared well within standards and effects to riparian areas from livestock appeared negligible.

Table 3. Summary of Information on Federally-Administered Livestock Grazing Allotments in the NFJDR Subbasin.

Allotment	Unit	Water-shed	Acres (total)	Type/ Class of Live-stock ¹	Season of Use ²	Permitted Livestock Numbers ³	Miles of Fish-Bearing Streams in each unit
Camp Creek	Beaver Meadows	93	7559	c/c	even- 8/15-9/30 odd- 7/22-9/15	266	14.5
Central Desolation	Case	36,37	1439	c/c	even- 6/1-7/15 odd- rested	143 0	0.23
	Deep Canyon	36,37	3827	c/c	7/16-9/30	143	3.31
	Outlaw	35,36	5330	c/c	even- 8/2-9/30 odd- 6/1-8/1	188 188	.69
	Ridge	36,37	811	c/c	even- rested odd- 6/1-7/15	0 143	0.17
	Turner	35,36	5445	c/c	even- 6/1-8/1 odd- 8/2-9/30	188 188	2.02
Cooper Creek	North	32	811	c/c	even- 7/1-8/20 odd- 8/2-9/20	320	0
	South	32	2055	c/c	even- 8/21-9/20 odd- 7/1-8/20	320	0
Cunningham		97	18298	s	6/16-9/30	1825	13.25
Deer Creek		11	2987	c/c	6/11-9/15	88	1

² Riparian Management Objectives (RMOs) - Quantifiable measures of stream- and stream-side conditions that define good anadromous fish habitat, and serve as indicators against which attainment, or progress toward attainment, of the (riparian) goals will be measured (USDA and USDI 1995).

Allotment	Unit	Water-shed	Acres (total)	Type/Class of Live-stock ¹	Season of Use ²	Permitted Livestock Numbers ³	Miles of Fish-Bearing Streams in each unit
Ditch Creek	Ditch Creek	26,27	2839	c/c	8/5-8/24	116	4.05
	Elkhorn	27,28	7618	c/c	6/15-7/9	320	0.44
	Kelly Prairie	27,28	4227	c/c	7/10-9/18	248	7.43
	North Elder	27	4978	c/c	6/20-7/14	210	2.22
	North Mallory	27,28	3342	c/c	8/5-8/28	409	2.57
	Shaw Creek	27,28	1521	c/c	7/31-9/15	409	2.96
	South Elder	27	2425	c/c	6/1-6/19	409	3.24
	South Mallory	27	5286	c/c`	7/15-8/4	409	4.46
Donaldson	Glade	8	4393	c/c	even- 8/23-10/31 odd- 6/15-8/22	123	3.25
	Hinton	8	3419	c/c	even- 6/15-8/22 odd- 8/23-10/31	123	1
FG Whitney	East Gopher Creek	28,29,30	16940	c/c	rotation: year 1: 8/14-9/22 year 2: 8/14-9/22 year 3: 8/14-9/22	987	18.35
	Johnson Creek	28,30	674	c/c	4-9/23-9/30	197	0.55
	Log Springs	30,31,32	5540	c/c	rotation: year 1: 6/16-7/15 year 2: 6/16-6/30 year 3: 6/16-6/30	790	2.18
	Wolf Springs	30,31,32	9593	c/c	rotation: year 1: 7/16-8/13 year 2: 7/1-8/13 year 3: 7/1-8/13	716	7.93
	West Gopher	28	9034	c/c	rested indefinitely		14.74
	Fivemile	30	3078	c/c	rested indefinitely		4.93

Allotment	Unit	Water-shed	Acres (total)	Type/Class of Live-stock ¹	Season of Use ²	Permitted Livestock Numbers ³	Miles of Fish-Bearing Streams in each unit
Fox	Fox Creek	8	10705	c/c	6/11-8/10	125	7.6
	Wiley Creek	8	8306	c/c	6/11-8/10	170	0
Hamilton	West	11	2491	c/c	6/11-9/15	95	1
Hardman	East Wildcat	24,25	1658	c/c	6/8-6/16	128	1.13
	East Wilson	24,25	4291	c/c	6/17-7/14	354	0
	Grassy	24	4477	c/c	7/15-8/8	354	3.49
	West Wildcat	24	790	c/c	9/9-9/17	255	0
	West Wilson	24	2922	c/c	7/7-7/14	198	4.4
	Whitetail	24	5914	c/c	8/9-9/8	439	5.36
Hidaway	Dry Camas	97	5100	c/c	rotation: year 1: 7/4-7/29 year 2: 6/16-7/11 year 3: 7/28-8/22 year 4: 7/24-8/19	587	4.66
	East Trough Springs	97	2309	c/c	rotation: year 1: 6/16-7/3 year 2: 8/23-9/9 year 3: 8/23-9/9 year 4: 7/6-7/23	955	1.87
	Nine Sections	33,96, 97	9208	c/c	rotation: year 1: 7/30-9/9 year 2: 7/12-8/22 year 3: 6/16-7/29 year 4: 8/20-9/30	955	7.32
	West Trough Springs/	96,97	3013	c/c	rotation: year 1: 9/10-9/30 year 2: 9/10-9/30 year 3: 9/10-9/30 year 4: 6/16-7/5	457	0.47

Allotment	Unit	Water-shed	Acres (total)	Type/Class of Live-stock ¹	Season of Use ²	Permitted Livestock Numbers ³	Miles of Fish-Bearing Streams in each unit
	Tower	33,95, 96,97	18057	c/c	rested indefinitely		25.87
Hutchinson	On-off 1	32	1295	c/c	8/2-9/25	169	0
	On-off 2	32	402	c/c	7/10-8/1	67	0
Indian Creek (MNF)	West	8	1000	c/c	6/11-7/15	24	0.5
	East	8		c/c	7/16-9/30	24	0.5
Indian Creek (UNF)	Battle Creek	35,36	23933	c/c	7/16-9/30	982	20.87
	Bully Creek	36,37	15832	c/c	6/16-7/15	1172	13.01
	Indian Creek	36,37	5897	c/c	7/16-9/30	1311	0
	Meadows	35,36, 93	17504	c/c	rested indefinitely		21.23
King On-Off	Basin	8	290	c/c	6/1-9/15	6	0
	South	8	411	c/c	6/1-9/15	6	0
	West	8	749	c/c	6/1-9/15	6	0
Klondike	South	97	5868	c/c	rotation: year 1-rested, year 2- 7/16-8/20 year -826-9/30		
	Middle	97	4463	c/c	rotation: year 1: 8/27-9/30 year 2: 7/16-8/20 year 3: 8/1-8/25	408	8.27
	North	97	235	c/c	rotation: year 1: 6/1-8/26 year 2: 8/21-9/30 year 3: 6/1-7/31	1002	0

Allotment	Unit	Water-shed	Acres (total)	Type/ Class of Live-stock ¹	Season of Use ²	Permitted Livestock Numbers ³	Miles of Fish-Bearing Streams in each unit
Little Wall	Bacon Creek	25	1142	c/c	non-use		4.86
	East Matlock	25	55	c/c	6/1-6/2	18	4.92
	Hog Creek	25,26	7017	c/c	9/1-10/8	682	10.6
	Keeny	24,25	6211	c/c	8/6-8/31	506	3.9
	Matlock Flat	25	345	c/c	6/3-6/5	66	0
	North Madison	26	244	yr	9/1-10/8	138	0
	Red Hill	25	7918	c/c	6/10-6/30	550	10.7
	Sunflower	24,25	6609	c/c	7/13-8/5	506	2.25
	West Matlock	25	4	c/c	6//6-6/9	26	0
Lucky Strike	Middle	32,97	7928	c/c	8/10-9/30	578	2.26
	North	32,97	509	c/c	6/-7/15	500	0
	South	32,97	4244	c/c	7/16-8/9	278	3.07
Matlock	East	29,30,31	4732	c/c	6/11-8/16	928	5.84
	West	28,29,30	4619	c/c	8/17-9/30	928	0
McDonald Springs On-Off		32	1690	c/c	7/16-8/15	212	0
Ridge	Boothill	8	749	c/c	7/23-9/15	58	0
	Highway	8	905	c/c	6/11-9/15	12	0
	Ridge	8	19881	c/c	6/1-7/22	58	0
Swale Creek	Gilman	26,27	7220	c/c	7/16-8/15	528	10.43
	Little Martin	27	2411	c/c	10/15- 10/16	53	0
	Skookum	26	5242	c/c	6/15-7/15	370	6.32

Allotment	Unit	Water-shed	Acres (total)	Type/ Class of Live-stock ¹	Season of Use ²	Permitted Livestock Numbers ³	Miles of Fish-Bearing Streams in each unit
	Texas	26,27	12552	c/c	8/16-10/14	858	10.29
Tamarack/ Monument	Happyjack	24	3594	c/c	7/11-9/1	279	1.05
	Indian Creek	23,24	5813	c/c	7/11-9/1	389	4.01
	Little Tamarack	24	75	c/c	5/1-6/5	331	0
	Rail Canyon	23,24	6612	c/c	5/1-6/10	221	0
	Stalling Butte	24	26	c/c	7/28-9/1	322	0
	Thorn Butte	23,24	205	c/c	5/1-7/10	368	0
	Wildhorse	24	8552	c/c	6/6-7/27	478	1.81
Texas Bar	Hello Boy	33,34,35	6967	c/c	7/16-9/20	903	1.37
	Long Hollow	34	3010	c/c	6/1-7/15 9/21-9/25	695	0.6
	Pinegrove	35,35	1931	c/c	6/1-7/15	625	0
	Pearson	33,34, 35,95, 96	42008	c/c	rested indefinitely	1006	40.27
	Texas	34,35	5184	c/c	7/19-9/18	250	0
Thompson Flat	Middle	28,29	2167	c/c	8/2-8/23	156	2.76
	North	28,29	1627	c/c	8/24-9/26	242	3.46
	South	28,29	2780	c/c	6/7-8/1	399	2.29
Trout Meadows		34,35,94 ,95	31540	s	7/1-9/15	770	51.15

Allotment	Unit	Water-shed	Acres (total)	Type/Class of Live-stock ¹	Season of Use ²	Permitted Livestock Numbers ³	Miles of Fish-Bearing Streams in each unit
Western Desolation	North	29,37	5609	yr	6/1-8/15	372	0
	Smith	37	3356	c/c	8/9-9/30	361	3.240
	South	29,37	3767	c/c	6/1-8/8	470	0.21
¹ Livestock type/class is abbreviated as follows: c/c= Cattle/cow and calf pair, s=sheep/ewe-lamb pairs), yr=cattle/yearling bovine ² Includes rotational sequence or odd/even year changes ³ Permitted Numbers=# of each class of animal permitted (e.g. # cow/calf pairs), Numbers can be back-calculated from AUMs. AUM=amount of forage required for one Animal Unit (1000-lb. dry mature cow or equivalent), for one month. One Cow/calf pair=1.32 Animal Units. AUMs available are listed in Table F01.1 of the BA, and are incorporated by reference.							

1.2.5.1 Allotment-Specific Descriptions

Camp Creek Allotment (NLAA)

Beaver Meadows unit is the only pasture in this allotment in the NFJDR subbasin. The majority of the Beaver Meadows unit is in the Granite Creek watershed. This area was heavily grazed in the past, but according to the BA, is currently in an upward trend towards recovery. The WWNF has rated this pasture area as in late ecological seral status, indicating that the plant communities are composed primarily of late seral species. However, the presence of some early seral species, such as silver sagebrush (*Artemisia cana*), in this meadow indicate that recovery is not yet complete. A standard of 35% forage utilization was established for this allotment in 1993, and between 1998 and 1993, residual stubble height in the riparian greenline increased and were at least six inches each year. To avoid effects to spawning MCR steelhead, planned use on the Beaver Meadows unit is 266 cow/calf pair for a season from July 22 to September 14 on odd years, and August 8 to September 30 on even years.

Dispersed recreation and some limited infestation of noxious weeds are also having some negative effects on the riparian vegetation community and stream morphology in this unit. Based on the recovering condition of the riparian vegetation in this unit and the avoidance of spawning impacts, the WWNF has determined that livestock grazing on this allotment is NLAA MCR steelhead.

Central Desolation Allotment (NLAA)

The Central Desolation Allotment consists of five units (Case, Turner, Outlaw, Deep Canyon, and Ridge) in the NFJDR, Desolation Creek, and Meadow Brook watersheds. The BA states that the Case, Ridge, and Deep Canyon units do not contain MCR steelhead spawning or rearing habitat. The Outlaw pasture does not contain MCR steelhead spawning habitat, but the NFJDR, which provides migration and rearing habitat, is in this unit. According to the BA, cattle do not access this section of the NFJDR due to steep topography. Peep Creek, on the Turner unit, may contain MCR steelhead spawning habitat, but this has not been verified by UNF personnel at this time. Fisheries staff from the UNF will continue to survey Peep Creek for spawning activity and if MCR steelhead spawning is discovered, turnout in this unit will occur after July 15 or the spawning areas will be fenced. Other than Peep Creek, the Turner unit does not contain MCR steelhead spawning habitat.

One problem area in the Ridge Unit is identified in the BA. Approximately 200 yards of East Meadow Brook has been damaged during past years due to the concentration of cattle in this area. In 1999, stubble height standards were exceeded in this area. The area was rested in 2000 and 2002. Monitoring conducted in 2002 verified that cattle were not accessing the area during rest and damaged banks were beginning to recover. The UNF is continuing to work with the permittee for this allotment to avoid this problem in the future.

The BA states that there are many barriers, such as steep topography and down wood, throughout the allotment that prevent cattle from reaching riparian areas. Monitoring results indicate that utilization standards were met in all key areas except the above mentioned problem area, during the period from 1993-2001. Based on these factors, and the limited amount of spawning and rearing habitat in this allotment, the UNF has determined grazing on this allotment to be NLAA MCR steelhead.

Cooper Creek Allotment (NLAA)

The Cooper Creek Allotment is comprised of two units (North and South) both in the Owens Creek watershed. The UNF has determined that there is no MCR steelhead spawning or rearing habitat on this allotment. Excess utilization of forage has occurred occasionally on this allotment, but the UNF is continuing to work with the permittee to improve grazing practices. The UNF has determined the excess use did not cause sufficient degradation of riparian habitat that would result in downstream effects (sediment transport, temperature increases) to areas in the watershed where MCR steelhead are present. Livestock grazing on this allotment has been determined to be NLAA MCR steelhead by the UNF.

Cunningham Sheep Allotment (NLAA)

One unit of this sheep allotment is in the NFJDR subbasin, in the Upper Camas Creek watershed. The majority of the allotment is in the Umatilla River subbasin. On the NFJDR subbasin portion of this allotment, MCR steelhead are present in Rancheria, Salsbury, and Bowman Creeks.

Sheep are turned out in this allotment in June and herded to different areas by shepherds. No grazing is allowed near fish-bearing streams before July 15, but sheep are allowed to water at

streams twice per day. Crossing of streams occurs at designated sites but not before July 15. No camping by shepherds is allowed near streams. Monitoring data collected by the UNF indicates areas of this allotment are recovering from past impacts of livestock grazing. Utilization standards were met in all key areas of the NFJDR portion of this allotment during the period of 1993-2001. The UNF has determined that the protective measures planned for this allotment are sufficient to prevent take of MCR steelhead or adverse impacts to riparian habitats. In addition, sheep are under close supervision of shepherds while grazing and watering. Consequently, the UNF has determined that grazing on this allotment is NLAA MCR steelhead.

Deer Creek Allotment (2003 only) (NLAA)

The Deer Creek Allotment is managed as one unit by the MNF and is in the Deer Creek watershed. This allotment is rested every other year. According to the BA, riparian areas in this allotment are recovering from past management practices such as logging in riparian corridors. The BA also states that riparian areas and streams in the Deer Creek allotment are not in the desired condition but are in an upward trend. To avoid spawning impacts, cattle are held in the southern areas of the allotment until after July 15. Salting and herding will also be used to keep cattle away from riparian areas. Each year, a fish biologist will conduct a spawning survey and habitat assessment in stream segments of concern. The MNF has determined that livestock grazing on this allotment is NLAA MCR steelhead. The MNF is seeking consultation for livestock grazing on this allotment for the 2003 grazing season only, future consultation on this allotment will occur in conjunction with consultation on the other allotments administered by the MNF.

Ditch Creek Cattle Allotment (NLAA)

The Ditch Creek Allotment consists of six units (Ditch Creek, Elkhorn, Kelly Prairie, North Elder, North Mallory, Shaw Creek, South Elder, and South Mallory) in the in the Skookum Creek, Mallory Creek, and Potamus Creek watersheds. Three streams that provide year-round rearing and spawning habitat for MCR steelhead flow through grazed portions of this allotment. Several other streams provide rearing and potential spawning habitat when flows are sufficient to support fish presence. No steelhead habitat occurs in the North Elder, Elkhorn, and Shaw Creek units.

The UNF and permittee have instituted several protective measures to prevent take of MCR steelhead and protect riparian vegetation communities. Riparian areas of Ditch Creek are fenced to prevent harassment of spawning MCR steelhead and turnout in the South Mallory unit is delayed until after July 15 to protect steelhead eggs and pre-emergent alevins. All streams in the South Elder unit are fenced. The permittee employs one full time and three part time riders to herd cattle away from riparian areas. Several upland water sources for cattle have also been developed to encourage cattle to remain in upland areas. Riparian areas in most units of this allotment are in good condition. The UNF has determined that the livestock grazing activities on this allotment are NLAA MCR steelhead.

Donaldson Allotment (2003 only) (NLAA)

The Donaldson Allotment consists of two units in the Upper Cottonwood Creek watershed. The use of the units are rotated annually. According to the BA, riparian areas in this allotment are showing an upward trend. Salting, herding, and development of upland water sources are used to keep cattle away from riparian areas. According to the BA, cattle access to the portion of Fox Creek in this allotment is limited by steep topography. The MNF has determined that the protective measures planned for this allotment are sufficient to prevent adverse effects to MCR steelhead and their habitat and thus have determined grazing on this allotment is NLAA MCR steelhead. The MNF is seeking consultation for livestock grazing on this allotment for the 2003 grazing season only. Future consultation on this allotment will occur in conjunction with consultation on the other allotments administered by the MNF.

FG Whitney Allotment (NLAA)

The FG Whitney Allotment consists of four units (East Gopher Creek, Johnson Creek, and Log Springs) that are currently grazed. The Fivemile and West Gopher Creek units are currently being rested. However, there is no division fence between the East and West Gopher Creek units so use of this area by cattle may occur. According to the BA, cattle are prevented from reaching any of the riparian areas in the western area of this allotment by down wood and steep rugged terrain. The east side of the allotment has many upland water sites (mostly ponds) and most of the riparian areas are fenced. The UNF fisheries staff conduct spawning surveys in the unfenced (water gaps) areas of Sugarbowl Creek. If MCR steelhead redds are found, cattle are excluded from the area by additional fencing or other methods until July 15.

Monitoring effort in this allotment indicate that many riparian areas are recovering from past grazing practices. Stabilization of banks has occurred with the increased growth of sedges and grasses in many disturbed areas. Width to depth ratios have decreased in some areas and more woody debris is being found in stream channels. Utilization standards are routinely met on this allotment. UNF monitoring of riparian areas indicated that recovery is occurring in the form of stabilizing banks, greater abundance of sedges, and narrowing of some stream channels. The UNF has determined that grazing activities on this allotment are NLAA MCR steelhead. This determination is based on the fact that most spawning areas are fenced or surveyed for MCR steelhead redds before turnout, protective measures are effective at reducing the use of riparian areas by cattle, and riparian areas are recovering from past grazing practices.

Fox Allotment (2003 only) (NLAA)

The Fox Allotment is managed as three units (Fox Creek, Wiley Creek, and South Fork) all of which are in the Upper Cottonwood Creek watershed. According to the BA, riparian areas in this allotment are in an upward trend. To avoid interference with MCR steelhead spawning, turnout will occur in the Fox Creek unit approximately three miles from critical stream areas. Fence maintenance and maintenance of upland water sources are carried out to keep cattle away from areas where MCR steelhead spawning occurs. Turnout in the South Fork unit is delayed until after July 15. The BA states that the Wiley Creek unit does not contain streams that provide habitat for MCR steelhead. Salting and herding are also used to keep cattle out of riparian areas. The MNF has determined that livestock grazing on this allotment is NLAA MCR

steelhead because the protective measures planned for this allotment are sufficient to prevent adverse effects to MCR steelhead and their habitats. The MNF is seeking consultation for livestock grazing on this allotment for the 2003 grazing season only. Future consultation on this allotment will occur in conjunction with consultation on the other allotments administered by the MNF.

Hamilton Allotment (2003 only) (LAA)

The Hamilton Allotment is managed as two units both of which are in the Lower Cottonwood Creek watershed. There are no streams that provide habitat for MCR steelhead in the North East pasture. In the West pasture, cattle are turned out on the ridgetop area away from streams. This area has water available, and salting is used to encourage cattle to stay in this area. The closest stream is approximately one mile away and 800 feet in elevation below the ridgetop turnout area. The BA states that cattle access to streams is limited by brushy, steep terrain. The BA also indicated that riparian areas and stream segments in this allotment are in an upward habitat trend and are recovering from past disturbances. Results from monitoring in 2002 indicate that end of season standards for stubble height, bank damage and shrub utilization were not met.

In the BA, the MNF determined livestock grazing on this allotment to be NLAA MCR steelhead. The determination was later changed to LAA MCR steelhead due to the failure of this allotment to meet utilization standards and concerns that livestock were accessing riparian areas more often than was previously realized. The MNF has determined that the livestock grazing on this allotment is reasonably certain to result in interference with MCR steelhead spawning and have adverse effects to MCR steelhead habitat. The MNF is seeking consultation for livestock grazing on this allotment for the 2003 grazing season only, future consultation on this allotment will occur in conjunction with consultation on the other allotments administered by the MNF.

Hardman Allotment (NLAA)

The Hardman Allotment consists of six units (East Wildcat, East Wilson, Grassy, West Wildcat, West Wilson, and Whitetail) in the Wall Creek and Little Wall Creek watersheds. Three riparian exclosures (non-grazed) are in this allotment. All MCR steelhead spawning habitat in this allotment is in one of the exclosures. Herding, riding, and salting are used to keep cattle out of other, unfenced riparian areas. There are also 61 upland water developments. The BA states that the riparian areas in this allotment are recovering due to the fencing and efforts to keep cattle out of riparian areas. Four new riparian exclosures are either planned or being constructed at this time. End-of-season utilization standards have been consistently met on this allotment.

The UNF has determined livestock grazing in this allotment to be NLAA MCR steelhead. This determination was made because all MCR steelhead spawning areas are fenced and turnout of livestock in rearing areas occurs after July 15. The riparian vegetation communities are recovering due to the increased fencing and efforts to keep cattle out of riparian areas.

Hidaway Allotment (NLAA)

The Hidaway Allotment consists of five units (Dry Camas, East Trough Springs, Nine Sections, West Trough Springs, and Tower) in the Upper Camas Creek, Hidaway Creek, Big Creek, and Cable Creek watersheds. The Tower unit is currently being rested and the UNF plans to drop this unit from the allotment in the near future. According to the BA, cattle movement in the eastern portion of this allotment is restricted by steep, rugged terrain, and down wood. The BA also states that cattle are restricted from many of the high gradient streams in this allotment by natural barriers such as down logs. Approximately three miles of seasonal electric fence and 15 miles of permanent fence have been constructed to restrict cattle from stream reaches with easy access. Monitoring by the UNF indicates that riparian areas in this allotment are recovering and many past problem areas have now been fenced. Utilization standards were consistently met in this allotment for the period of 1993-2001. The UNF provided information to NOAA Fisheries indicating that the Nine Sections unit of this allotment did not meet standards in 2002.

The UNF has determined that livestock grazing on this allotment is NLAA MCR steelhead. This determination was made because livestock do not have access to areas where spawning may occur before July 15 and riparian habitat conditions in the allotment have been improving in response to efforts to keep livestock out of riparian areas.

Hutchinson Allotment (NLAA)

The Hutchinson Allotment consists of two units in the Owens Creek watershed. There is no MCR steelhead habitat on this allotment. Streams on this allotment are small and typically dry during the summer. Limited riparian vegetation exists due to the lack of water during the summer. The UNF has determined that, due to the absence of steelhead habitat and the negligible chance for the transmission of downstream effects, livestock grazing on this allotment is NLAA MCR steelhead.

Indian Creek Allotment (MNF, 2003 only) (NLAA)

The Indian Creek Allotment on the MNF is in the Upper Cottonwood Creek watershed and is managed as two units. According to the BA, there is no MCR steelhead spawning habitat on this allotment. It is unknown if rearing of MCR steelhead occurs on this allotment. The BA states that riparian areas in this allotment are in an upward trend. The stocking rate on this allotment is relatively low (24 cow/calf pairs). Monitoring results from 2002 indicate that this allotment did not meet utilization standards. The permittee has agreed to build a fence to protect the portion of Indian Creek on this allotment. The MNF will monitor this allotment in 2003 to ensure the fence is allowing for recovery of riparian areas of this allotment. The MNF has determined that the new proposed action for livestock grazing on this allotment is NLAA MCR steelhead. The MNF is seeking consultation for livestock grazing on this allotment for the 2003 grazing season only, as future consultation on this allotment will occur in conjunction with consultation on the other allotments administered by the MNF.

Indian Creek Allotment (UNF) (NLAA)

The Indian Creek Allotment on the UNF consists of three units (Battle Creek, Indian Creek, and Bully Creek) in the NFJDR, Desolation Creek, Meadow Brook, and Granite Creek watersheds. According to the BA, cattle movement in the eastern portion of the Bully Creek unit is very difficult due to the dense conifer stands, down wood, and rugged terrain. Approximately seven miles of seasonal electric fence on Bully, Kelsay, Sponge, and Bruin creeks keep cattle from accessing easily reached riparian areas. Permanent fencing excludes cattle from portions of Little Indian, Howard, and Park creeks. The Indian Creek and Battle units of this allotment contain MCR steelhead spawning habitat. Turnout will not occur on these allotments before July 15.

Monitoring conducted by the UNF indicates that riparian areas in this allotment are recovering from past grazing practices. Much of the recovery is likely due to fencing of sensitive riparian areas. Increasing amounts of sedges in riparian sinks indicates that water table is rising. Some of the higher elevation meadows in this allotment are experience limited recovery of riparian hardwoods. The UNF suspects that heavy elk use in these areas is responsible for the slow recovery of hardwoods. Utilization standards were met in all but one key area for the period of 1993-1996. In 1999, stubble height standards were not met in two key areas along Bully Creek. In 2000 and 2001, utilization standards were met or exceeded in all units monitored on this allotment.

The UNF has determined that livestock grazing on this allotment is NLAA MCR steelhead. This determination is based on the limited access livestock have to streams due to natural barriers and fencing and the recovery of riparian areas in response to new grazing practices.

King On-Off Allotment (2003 only) (NLAA)

The King On-Off Allotment is managed as three units (Basin, South, and West) all of which are in the Upper Cottonwood Creek watershed. This allotment is managed as a on-off allotment, but according to the BA, public officials are not allowed on the private portion. For this reason, information on conditions on the this portion of the allotment could not be provided. No streams that provide habitat for MCR steelhead are on the public portion of this allotment. Stocking rates are very low for this allotment, with six cow-calf pairs scheduled to graze from June 1 to September 15. According to the BA, livestock grazing on this allotment, at least on the public portion, is not expected to result in adverse effects to MCR steelhead or their habitat. For this reason the MNF has determined that livestock grazing on this allotment is NLAA MCR steelhead. The MNF is seeking consultation for livestock grazing on this allotment for the 2003 grazing season only, as future consultation on this allotment will occur in conjunction with consultation on the other allotments administered by the MNF.

Klondike Allotment (NLAA)

The Klondike Allotment consists of three units (Middle, North, and South) in the Upper Camas Creek watershed. According to the BA, cattle movement in the North unit is limited by steep terrain, down logs, and dense conifer stands. In the Middle unit, extensive fencing excludes cattle from the majority of Bear Wallow Creek. Lane Creek, also in the Middle unit, contains

spawning and rearing habitat for MCR steelhead. According to the BA, livestock use in the areas around Lane Creek is extremely limited. A survey conducted in 1997 indicated that livestock did not use this areas at any time during the grazing season. In 1999, the UNF constructed a drift fence to further limit access to Lane Creek. Utilization standards were met consistently for the period of 1993-2001.

The UNF has determined that livestock grazing on this allotment is NLAA MCR steelhead. This determination was made due to the fact that cattle do not access MCR steelhead spawning areas and cattle access to riparian area in this allotment is generally limited by geographic features.

Little Wall Allotment (NLAA)

The Little Wall Allotment is made up of nine units (Bacon Creek, East Matlock, Hog Creek, Keeny, Matlock Flat, North Madison, Red Hill, Sunflower, and West Matlock) in the Wall Creek, Little Wall Creek, and Skookum Creek watersheds. Management of this allotment by the permittee includes riding, salting, and temporary electric fence. These efforts in conjunction with 112 upland water developments, minimize the use of riparian areas by cattle. Grazing in three units, Bacon Creek, Little Wall, and Hog Creek, will be deferred until July 15 to protect spawning MCR steelhead. According to the BA, steep topography in certain areas limits livestock access to Skookum and Little Wall creeks. UNF monitoring results indicate improving or stable riparian conditions throughout the allotment. Utilization standards have been met in this allotment, however post-season stubble height measurements were only started recently.

Due to the limited access cattle have to riparian areas and deferring grazing in some units, UNF has determined that livestock grazing on this allotment is NLAA MCR steelhead. This determination is also based on avoidance of impacts to spawning MCR steelhead and UNF monitoring results that indicate recovering riparian conditions.

Lucky Strike Allotment (NLAA)

The Luck Strike Allotment is made up of three units (Middle, North, and South) in the Owens Creek and Upper Camas creek watersheds. According to the BA, cattle access to riparian areas is limited by steep rugged terrain, down wood, and dense conifer stands throughout the allotment. No MCR steelhead habitat is in the North unit. Temporary and electric fence has been constructed in areas where cattle can easily access riparian areas. Grazing on the Middle unit is deferred until after July 15 to protect MCR steelhead spawning activities. Utilization standards for this allotment were met in every key area for the period of 1993-2001.

The UNF has determined that due to the geographic features limiting cattle access to majority of riparian areas in this allotment, negative effect to riparian areas and interference with MCR steelhead spawning and rearing are not likely to occur. Monitoring results in this allotment indicate riparian recovery and fencing efforts either underway or planned will further restrict cattle access to riparian areas. For these reasons, the UNF has determined that livestock grazing on this allotment is NLAA MCR steelhead.

Matlock Allotment (NLAA)

The Matlock Allotment is divided into two units that area currently grazed, East and West. Another unit, Kinzua, is not currently grazed but will be used again in the future. According to the BA, cattle access to Fivemile Creek, Silver Creek, and Matlock Creek are limited by fencing and steep rugged terrain. MCR steelhead are not present in the West unit. The BA also states that adequate upland forage and water sources facilitate good distribution on the tablelands throughout the East unit. Monitoring data from 1993-2001 indicates that utilization standards were met or exceeded in all key areas of this allotment. Additional monitoring conducted by the UNF indicates that recovery of riparian areas along Fivemile Creek is occurring. The UNF has determined that livestock grazing on this allotment is NLAA MCR steelhead.

McDonald Springs Allotment (NLAA)

The McDonald Springs Allotment is an “on-off” allotment consisting of private and Forest Service land. This allotment is managed as one unit. The permitted number of cattle on the Forest Service portion of the allotment is six cow/calf pairs. All the stream channels on this allotment are ephemeral. No MCR steelhead habitat is on this allotment. Limited survey data from the UNF indicates that the Forest Service portion of this allotment has met utilization standards in the past. No information is available about the private land section of this allotment. The UNF has determined that this allotment is NLAA MCR steelhead due to the lack of habitat available to the species in the allotment. In addition, the ephemeral nature of the channels on this allotment and the season of use make the transmission of downstream effects to MCR steelhead unlikely.

Ridge Allotment (2003 only) (NLAA)

The Ridge Allotment is managed as three units (Boothill, Highway, and Ridge) all in the Upper Cottonwood Creek watershed. The BA indicates that the riparian areas in this allotment are recovering from past disturbances, such as logging in riparian corridors, and are in an upward trend. No streams in this allotment provide habitat for MCR steelhead, but streams in the allotment do provide water to downstream areas where MCR steelhead spawn and rear. Utilization standards were not met during 2002 in this allotment. The MNF is reducing the season of use and will monitor this allotment during the 2003 grazing season to ensure that standards are met. The MNF has determined that livestock grazing on this allotment is NLAA MCR steelhead. The MNF is seeking consultation for livestock grazing on this allotment for the 2003 grazing season only, as future consultation on this allotment will occur in conjunction with consultation on the other allotments administered by the MNF.

Swale Creek Allotment (NLAA)

The Swale Creek Allotment consists of four units (Gilman, Little Martin, Skookum, and Texas) in the Skookum Creek and Mallory Creek watersheds. As stated in the BA, since early 1992, management on the Swale Creek allotment has relied on low stocking rates (light grazing intensity of 12.7 acres per AUM) herding, salting, electric fencing and monitoring to maintain livestock distribution and thereby maintain or improve resource conditions. The BA also states that these management practices have proven very effective in improving riparian resource conditions on the allotment.

Turnout of livestock occurs before July 15 on the Skookum unit, but all streams in this unit have been fenced. Temporary fence has also been installed around riparian areas of Bear and Swale creeks in the Gilman unit. Limited UNF monitoring data indicates an increase or maintenance in vegetative cover along streambanks and gravel bars in riparian areas of this allotment. The UNF has determined that livestock grazing activities on this allotment are NLAA MCR steelhead.

Tamarack Mountain Allotment (NLAA)

The Tamarack Mountain Allotment consists of seven units (Happyjack, Indian Creek, Little Tamarack, Rail Canyon, Stalling Butte, Thorn Butte, and Wildhorse) in the NFJDR/Copper Canyon and Wall Creek watersheds. The Little Tamarack, Rail Canyon, Stalling Butte, and Thorn Butte units do not contain fish-bearing streams but do have intermittent and ephemeral channels. All streams in the Happy Jack and Wildhorse units have been fenced. Temporary fencing has been constructed in the Indian Creek unit to protect MCR steelhead spawning habitat. Limited monitoring by the UNF indicates that the utilization standards have been met in the past. Additional fencing has been proposed in this allotment to further limit cattle access to the riparian areas, although it can not be determined at this time when that fencing will be completed. The UNF has determined that the livestock grazing activities on this allotment are NLAA MCR steelhead.

Texas Bar Allotment (NLAA)

The Texas Bar Allotment consists of four currently grazed units (Hello Boy, Long Hollow, Pinegrove, and Texas) in the Cable Creek, Bridge Creek/ Pine Creek, and NFJDR watersheds. According to the BA, there are known streams in the Hello Boy unit that provide habitat for MCR steelhead. In the Long Hollow unit, there are no streams that provide habitat for MCR steelhead and one problem area on a non-fish-bearing stream has been excluded with electric fence. In the Pine Grove unit, cattle access to the NFJDR is limited by steep rocky terrain and no other streams that provide habitat for MCR steelhead are in this unit. In the Texas unit, historical problem areas in Juniper Canyon have been excluded by electric fencing.

The Pearson unit of this allotment has been rested since the Tower Fire in 1996 resulted in intense burning in many areas of this unit. During this fire, riparian areas were denuded of vegetation and soils were damaged. The UNF will continue to rest the Pearson unit of this allotment until a new allotment management plan is developed for this area. The UNF has determined that livestock grazing on this allotment is NLAA MCR steelhead.

Thompson Flat Allotment (NLAA)

The Thompson Flat Allotment consists of three units (Middle, North, and South) in the Potamus Creek, NFJDR/Matlock Canyon watershed. According to the BA, livestock access to much of Ellis and Potamus creeks is limited due to steep terrain, dense conifer stands, high stream gradient, and down wood. MCR steelhead spawning occur in streams in the North unit, so it is not grazed before July 15. Monitoring by the UNF indicates that utilization standards were not met at times during the period from 1993-2001. A portion of Ellis Creek that was easily accessible to cattle was recently excluded with electric fence. The UNF has determined that livestock grazing on this allotment is NLAA MCR steelhead.

Western Desolation Allotment (NLAA)

The Western Desolation Allotment consists of three units (North, Smith, and South) in the NFJDR/ Matlock Creek and Meadow Brook watersheds. According to the BA, cattle movement on the North unit is difficult due to steep rugged terrain and livestock tend to stay in the upland areas. In the Smith and South units, six miles of riparian fence excludes livestock from the majority of the riparian areas. The BA also states that there is a low probability of cattle being in the riparian areas especially during the spawning season since upland vegetation is plentiful and easy to access at this time. To avoid impacts to spawning MCR steelhead, cattle will not be allowed to access riparian areas where spawning takes place before July 15. Monitoring conducted by the UNF indicates conditions in riparian areas are improving while upland range conditions are in a static and degraded condition. The UNF has determined that the protective measures for this allotment are sufficient to prevent adverse impacts to MCR steelhead and their habitat, and thus the livestock grazing on this allotment is NLAA MCR steelhead.

1.2.5.2 Monitoring and Establishing Utilization Standards

The action area is within the area covered by PACFISH (USDA and USDI 1994). Agency activities in this area are required to be consistent with their Land and Resource Management Plan (LRMP) as modified by PACFISH. The broad scale consultation for MCR steelhead on the MNF, UNF, WWNF, and Prineville BLM land and resource management plans is currently incomplete.

An April 14, 2000, USFS/BLM memorandum transmitted the “2000 Grazing Implementation Monitoring Module (IIT)” to the MNF and other National Forests and Bureau of Land Management (BLM) districts in Oregon. The MNF conducted implementation monitoring in 2001 as directed in the module on MNF-administered allotments in the UJDR and MFJDR subbasins. The IIT grazing module was updated in 2002. Areas where monitoring will be focused are described above under each allotment.

Land management agencies such as the Forest Service and BLM establish utilization standards for livestock grazing in riparian areas. These standards provide “move triggers” for permittees as well as means to gauge the effects of grazing on RMOs. Typically, herbaceous residual stubble height is used as a standard to measure the utilization of riparian forage. In addition to residual stubble height, shrub utilization and bank damage estimates are also utilization standards. Permittees are instructed by land management agencies to move livestock when thresholds for utilization standards are approached or reached. Typically, stubble height utilization standards are set between four and six inches of residual stubble height. This means that as grazing in riparian areas begins to result in four to six inches of remaining herbaceous stubble height, livestock are moved to another unit or pasture. Sometimes stubble height measurements are taken on the most palatable species such as Kentucky blue grass. Other times, hydric vegetation such as sedges and rushes growing along the streambank are measured.

The WWNF, UNF, and MNF use the Interagency Implementation Team (IIT) protocol to measure stubble height of hydric vegetation present in the “greenline” found directly beside the

stream's edge. Hall and Bryant (1995) state that as stubble height of the most palatable species reaches three inches, it should be assumed that unacceptable grazing use in riparian areas will begin. It should be pointed out that Hall and Bryant's method relies on measuring stubble height of the most palatable species, while the "move trigger monitoring" and the IIT protocol used by the land management agencies relies on stubble height measurements of hydric vegetation such as sedges and rushes. These plants are typically less palatable to livestock, tall sedges and rushes are usually the last grasslike plants defoliated to any great extent when livestock graze riparian areas (Skinner 1998). For this reason, directly applying Hall and Bryant's three inch standard to monitoring stubble height of hydric vegetation is not usually sufficient to protect riparian areas for overgrazing. Normally, when hydric vegetation in the greenline is measured, standards are set at between four and six inches.

When land management agencies formulate residual stubble height standards for units or pastures within a grazing allotment, two primary factors are considered. The first factor is the hydrologic function of the vegetation. Herbaceous vegetation plays an important role in maintaining and building streambanks. Stems of herbaceous vegetation slow stream current velocity during high flow events and facilitate sediment deposition, a process essential to the building and maintaining of streambanks. Roots of herbaceous vegetation stabilize the soil and prevent erosion during high flow events. A study by Clary *et al.* (1996) found that in a simulated channel, residual stubble heights of 0.5 to 6 inches of flexible vegetation supported streambank rebuilding process within a single sediment loading and flushing. They also found that under, multiple loading and flushing events, 8 to 12 inches of residual stubble height also entrapped and stabilized significant amounts of sediment.

The second factor considered when determining stubble height standards is the contribution the residual vegetation makes to healthy riparian habitat. Herbaceous vegetation provides many important functions in a healthy riparian ecosystem. Overhanging grasses, sedges, and rushes provide shade to the stream and hiding cover for fish. In meadow systems, herbaceous vegetation may be the only shade providing plants. Overhanging herbaceous vegetation can also provide valuable overwintering habitat for juvenile salmonids. The presence of a healthy community of hydric vegetation in headwater wetland areas of watersheds also plays an important role in maintaining stream flow. The roots of this vegetation wick moisture into the soil during wet periods in the spring, maintaining a high water table. This water is then released gradually throughout the summer and fall, maintaining adequate stream flow during critical period for juvenile salmonid growth and survival. In grazed riparian systems, the presence of herbaceous vegetation prevents livestock from browsing hardwood shrubs. Clary and Leininger (2000) provide guidelines for establishing stubble height standards to avoid livestock browsing on hardwood shrubs but point out that residual stubble heights necessary to avoid browsing on shrubs depend on many factors and can vary between 10 and 20 cm (approximately four to eight inches.)

Considering these two factors, the land management agencies establish residual stubble height utilization standards for each unit or pasture. As previously mentioned, the standard is typically four to six inches of residual herbaceous stubble height. Clary and Leininger (2000) suggest

starting with a 10 cm (approximately four inch) stubble height standard and then monitoring the area to determine if a change needs to be made to improve riparian conditions. They also state that in certain areas, 15 to 20 cm (approximately 6 to 8 inches) of residual stubble height may be needed to protect streambanks sensitive to trampling or protect riparian shrubs from browsing. Meyers (1989) found that riparian areas with excellent, good, or rapidly improving conditions had vigorous woody plant growth and at least six inches of residual herbaceous stubble height remaining after the grazing season. For the allotments addressed in this Opinion, residual stubble height standards have been set between four and six inches. Many authors warn that when riparian grazing results in utilization beyond these standards, damage to riparian resources and stream function begin to occur (Clary and Lenniger 2000, Hall and Bryant 1995, U.S. BLM 1999). In areas where standards have not been met, riparian resources (such as those described in the RMOs identified in PACFISH) necessary for the survival and recovery of anadromous salmonids will be reduced or cease to exist.

1.2.6 Noxious Weeds

Weed Management (NLAA)

The WWNF proposes to treat several areas of noxious weed infestation in the Granite Creek watershed with herbicides. This is an ongoing activity carried out between May 1 to October 30 each year. According to the BA, the treatment of noxious weeds in this watershed is important in maintaining the integrity of the vegetative component of this ecosystem. The WWNF proposes to use the following brand name chemical: Tordon®, Banvel®, Rodeo®, and Roundup® to control various noxious weeds such as whitetop, leafy spurge, yellow star thistle, knapweeds, and dalmation toadflax.

The following mitigation measures are proposed for the herbicide use: (1) No application within RHCAs except for Rodeo® and Roundup®; (2) Tordon® is applied only by licensed applicators and is not applied in areas where it may reach water including RHCAs; (3) A Forest-wide spill plan has been developed; (4) application equipment will be thoroughly rinsed away from application sites; (5) no carrier other than water will be used; (6) no spraying will occur when wind speeds exceed 10 miles per hour; (7) no spraying of herbicides will occur within 50 feet of water when wind velocities exceed five miles per hour; (8) no spraying when ice or snows covers foliage; and (9) only Rodeo® will be used within 15 feet of streams.

1.2.7 Recreation Management and Special Use Permits (SUP)

Campground, Trailhead, and Recreation Site Maintenance (NLAA)

The UNF conducts maintenance, repairs, and construction at numerous recreation sites throughout the Forest. These sites are primarily campgrounds and trailheads, but also include interpretive and historic sites. A complete list of these sites, their location and their distance from streams is provided in the BA. Many of these sites are in RHCAs. Maintenance activities conducted at the sites include: (1) Brush removal; (2) cleaning outhouses and removing trash; (3) repairing structures; and (4) hazard tree removal. Some planned activities such as sign installation occur occasionally but require very minimal ground disturbance. Other activities

planned for these sites including toilet replacement, commercial thinning of timber, or site relocation will have to be consulted on separately. The UNF is developing a schedule to identify, and if needed, plan the relocation of sites in RHCAs that may be hindering the attainment of RMOs. However, limitations such as staffing or funding shortages may delay this process. Other mitigation measures for these sites in RHCAs include: (1) Hardening parking areas with gravel to prevent run-off and contain off-road driving; (2) boulder placement to control traffic; (3) placing signs directing ATV users to stay on designated trails and avoid crossing streams; and (4) involving of Forest fisheries staff in hazard tree felling.

The UNF has determined that these activities are NLAA MCR steelhead. This determination is based on the protective measures incorporated into the action to prevent adverse effects to riparian habitat or MCR steelhead. If it is found that activities at recreation sites are hindering the attainment of RMOs, the UNF will consider moving the sites if additional or alternative measures cannot be effectively implemented.

Trail Maintenance (NLAA)

The UNF conducts yearly maintenance and repair of trails on the Forest. These trails are used by hikers, horses, motorized vehicles, and bikes. Maintenance is conducted to prevent resource damage and provide a safe environment for trail users. It includes cutting and removing brush and down logs from the trail, maintaining trail drainage structures, rerouting trails around wet areas, and repairing stream crossings. Winter trails are groomed for snowmobile use. Many trail sections are in RHCAs. Planned conservation measures for trail maintenance include: (1) Leaving down trees removed from the trail in the area to provide large woody debris; (2) installation of water drainage structures to provide for proper drainage of the trail; and (3) decommissioned trails will be covered with debris to discourage use. Trail maintenance activities that will be consulted on separately are drainage pipe replacements in perennial streams, major trail reroutes, major trail reroutes, and new stream crossings.

The UNF has determined that the protective measures incorporated in the design of trail maintenance activities are sufficient to prevent adverse effects to riparian habitat and prevent the introduction of sediment into local streams. For these reasons, the UNF has determined that trail maintenance activities are NLAA MCR steelhead.

Arbogast Special Use Permit (SUP) (NLAA)

This Permit is for a pipe that transports water from a spring on private land across UNF to a reservoir on private land. The pipe is not in an RHCA, and U.S. Highway 395 runs between the pipe and the nearest stream. The UNF has determined, that due to the fact that this diversion has negligible effects on flow in local streams, issuance of this permit is NLAA MCR steelhead.

Bluewood SUP (NLAA)

This is a concessionaire permit authorizing the administration of Bull Prairie Campground. Activities would be similar to those described above for campground maintenance. The UNF has determined that issuance of this permit is NLAA for MCR steelhead for reasons stated in the campground, trailhead, and recreation site maintenance section.

Columbia Basin Electric Co-op SUP (NLAA)

This permit authorizes aerial power lines. The lines do not cross RHCAs and do not require extensive ground clearing. Due to the lack of effects to riparian areas, the UNF has determined that issuance of this permit is NLAA MCR steelhead.

Ferguson SUP (NLAA)

This permit is for a maintenance of a spring and one inch diameter pipeline for domestic water use. Some minor ground disturbance would be required if the pipeline broke. The amount of water to be removed is not specified in the permit although the total amount that could be removed by the pipe is minimal. The pipeline is in the RHCA of an intermittent tributary of Meadow Brook. The UNF has determined, because this diversion has negligible effects on flow in local streams, issuance of the permit is NLAA MCR steelhead.

Fitzgerald SUP (NLAA)

This permit is issued for a water pipeline providing water for domestic and agricultural use. The amount of water removed daily is approximately 500 gallons and is not taken from a fish-bearing stream. The BA states that UNF does not know whether a valid state water right exists. According to the BA, the amount of water removed does not significantly effect flows in Wall Creek, the nearest large stream. The UNF has determined that because this diversion has negligible effects on flow in local streams, issuance of the permit is NLAA MCR steelhead.

Greenhorn Water District SUP (NLAA)

This permit is for a 4-inch pipeline transferring water from two springs on UNF land to the town of Greenhorn. The water if not diverted, would normally reach Lightning Creek during the winter and spring when the proportional effect of the contribution from these springs on both flow and temperature would be relatively minor. The town has a water right of 1 cubic foot per second (cfs) for this diversion. The UNF has determined that issuance of this permit is NLAA MCR steelhead due to the small amount of water removed.

Indian Creek Cattle and Horse SUP (NLAA)

A permit is issued for the use and maintenance of a cabin and corral used by the range riders on the Indian Creek livestock grazing allotment. The structures are not in an RHCA. The cabin has not been used much recently because the unit of the allotment nearest to the cabin has been rested from grazing and will continue to be rested for at least the next five years. Due to the lack of effects on riparian habitat, the UNF has determined that the issuance of this permit is NLAA MCR steelhead.

Lake Penland Dam SUP (NLAA)

The Lake Penland Dam impounds the headwaters of Mallory Creek creating Lake Penland. The dam completely blocks fish passage, stopping the use of suitable MCR steelhead spawning habitat above the dam. However, based on additional information submitted by UNF regarding historic pre-dam conditions, flow in this section of the channel has likely always been marginal at best, and intermittent by early-mid summer. In addition to the dam, some recreational facilities exist at this site. The permit issued by the UNF is for maintenance of the dam, not for

the operation of the dam. The UNF has determined that although the dam has adverse effects on MCR steelhead by limiting flow downstream in the spring, the issuance of a permit to maintain the dam will not result in any additional effects to MCR steelhead. The UNF has determined that the issuance of this permit is NLAA MCR steelhead.

Mushroom Buyers SUP (NLAA)

Permits are issued to mushroom buyers to set up commercial operations to purchase mushrooms harvested on Forest land. Permitted sites are outside RHCAs and hardened to prevent mobilization of sediment. Due to the lack of activity or impacts to riparian areas, the UNF has determined that issuance of these permits are NLAA MCR steelhead.

Oregon State Forestry SUP (NLAA)

A permit is issued for the operation of radio equipment at Madison Lookout. Issuance of this permit is not expected to have any effect on MCR steelhead or their habitat and has thus been determined to be NLAA for this species.

Pearson Recreational Summer Home SUP (NLAA)

Permits are issued for five summer homes on the headwaters of South Fork Cable Creek. In 1996, three of these homes burned during the Tower Fire. At least some of the homeowners plan to rebuild. Water for the houses comes from springs and wells. The nearest fish-bearing stream is two miles away. Due to the lack of activity in and impacts to riparian areas, the UNF has determined that issuance of these permits is NLAA MCR steelhead.

Power Line SUP (NLAA)

Several permits are issued for aerial and buried power lines on the UNF. Maintenance of these lines includes removal of vegetation and some ground disturbance for repairing buried cables. Some power lines are in RHCAs. Hazard trees are felled near aerial line and trees in the vicinity of the lines are trimmed. No herbicides are used and the amount of vegetation removed is minimal. The UNF has determined that this issuance of this SUP is NLAA MCR steelhead. If work beyond that described in the BA is necessary, the UNF will consult on the additional work separately.

Telephone Utilities SUP (NLAA)

Two permits are issued for underground telephone lines providing: (1) Service to the Tupper Work Center from Heppner, and (2) from town of Monument to a private land residence within the boundary of the National Forest. No stream crossing occur and only minor ground disturbance will be required for maintenance of the lines. The UNF has determined that issuance of this permit is NLAA MCR steelhead.

Ward SUP (NLAA)

The UNF issues a permit for the fencing of nine acres of Forest land to allow livestock from private land access to a watering facility. The water comes from a spring box at an unknown location. Water flows into a metal trough with excess water spilling out and into a small non-fish-bearing nearby stream. According to the BA, the area around the trough is hardened with

rock and the surrounding vicinity is well vegetated. The UNF has determined that this issuance of this SUP is NLAA MCR steelhead.

Big Creek Meadows Camp/Trailhead and Adjacent Meadow Area)

Five dispersed campsites would be relocated out of Big Creek Meadow in the Big Creek RHCA, into adjacent upland dry areas outside the RHCA. Small lodgepole pine would be cleared to create the new upland campsites. This work is additive to work previously consulted through the Tower Fire BA, which received a biological opinion from NOAA Fisheries dated January 14, 2003 (refer to: 2002/00897).

Drift Fence Campground Improvements (NLAA)

Removal of hazard trees are planned for this campground. It is on a ridgetop far from any streams. The UNF has determined that due to the lack of potential effects to MCR steelhead or their habitat, this activity is NLAA MCR steelhead.

Moon Meadows Trailhead Improvements (NLAA)

The UNF plans to improve the condition of this meadow by relocating dispersed recreation and camping sites out of the meadow to drier sites and place boulders to block vehicle access the meadow. Some preparation, in the form of some tree removal and gravel addition, will occur at the drier relocation sites. These areas are away from any streams. Discouraging recreational use of the meadow should lead to improved conditions in this area. The UNF has determined that due to the lack of potential effects to MCR steelhead or their habitat, this activity is NLAA MCR steelhead.

Cabin Rentals (NLAA)

The UNF's cabin rental program require that personnel perform annual maintenance on these structures. This would involve painting, mowing and weed cutting, fence and water system maintenance, and setting traps for rodent control. None of these activities are expected to result in ground disturbance or adverse effects to MCR steelhead or their habitat. The UNF determined that cabin rentals are NLAA MCR steelhead.

Blue Mountain OHV Trail (UNF portion) (NLAA)

This section of the proposed new trail begins at the Christensen Trail #3185 in upper Meadow Creek in the Meadow Creek watershed, and extends eastward to the district boundary in the Trout Creek drainage where it will end. The trail may be extended in the future onto the adjoining La Grande Ranger District of the WWNF but there are presently no plans to do so. The majority of the new trail would be on existing closed roads and follow a historic stock driveway once it leaves the existing road system. Approximately .5 mile of new construction would be needed to create a connecting segment between the existing road system and the old stock driveway. One small perennial non-fish-bearing stream would be crossed with a new bridge. The construction of the new trail would be completed within one field season between June and October. The bridge would be constructed during the standard ODFW instream work window (July 15-August 15), and bridge approaches would be constructed above and away from streambanks to avoid bank disturbance. Other conservation measures would include oversight

by FS personnel highly experienced in proper trail design and construction, use of protection measures proven effective in the past on similar projects on neighboring ranger districts, trail routing to avoid removal of trees providing stream shade, and designing the bridge to accommodate a 100-year flood event. Streambank disturbance during bridge construction may introduce some sediment to the channel but the amount is expected to be negligible and discountable, based on, the small scale and duration of the disturbance combined with protection measures employed to avoid sediment introductions to the channel. The UNF determined that development of this new trail is NLAA MCR steelhead.

Frazier Summer Home SUP (LAA)

The UNF issues permits for the use of six summer homes in the Upper Camas Creek watershed. The houses are in the RHCA of Frazier Creek. Most of the structures and septic systems are within 50 feet of the stream. Some of the houses are supplied with water from a spring near the areas. The UNF is not aware, at this time, what type of water and septic systems are used at the remaining homes. No livestock are allowed and no commercial use of the facilities is allowed under the existing permit. According to the BA, little or no ground disturbance occurs at the site.

The UNF has determined that activities authorized by this permit are LAA MCR steelhead. This determination is based on the following: (1) The water withdrawals from the spring will reduce the amount of cool water entering Frazier Creek; (2) sewage from the septic system has the potential to reach Frazier Creek; (3) the impacts to riparian vegetation from the existing structures; and (4) the clearing of vegetation associated to maintain them is likely to prevent the attainment of RMOs in this area.

1.2.8 Miscellaneous Projects

Private Property Access (NLAA)

Two roads in the Granite Creek watershed allow access to private land inholdings. One of these roads accesses a currently inactive mine (Ben Harrison) and the other road accesses a summer residence (Walker/Max). The UNF issues permits for the landowners to use these roads to access their private property. Travel occurs on existing roads. The UNF has determined that this activity is NLAA MCR steelhead.

Dale Work Center (NLAA)

The Dale Work Center is a UNF administrative site near the NFJDR, 14 miles from Ukiah, Oregon. Several buildings are on the site, including a barn and bunkhouse. The primary purposes of the facility are to provide housing for employees and a staging and storage area for UNF work crews. The compound has its own sewer and water system. The facilities are in the RHCA of several streams and the water system removes water directly from the NFJDR. According to the BA water withdrawal rates are typically three million gallons per year with the heaviest withdrawals occurring during the summer. Given that the period of use is typically 120 days from June until September, this equates to an average withdrawal rate of 0.039 cfs of water removed from the NFJDR. Typical low flow rates downstream from the Dale Work Center measured by the US Geological Survey (USGS) gauge at Monument, Oregon are approximately

110-120 cfs.³ Stream flow rates for the NFJDR are lower at the work center, but the total amount of water withdrawn is still less than 1% of streamflow.

Some minor ground disturbing activities occur at the site but the chance of sediment generated from these activities reaching streams is small. The potential exists, at this site, for a sewage spill to occur. However, the UNF maintains the sewage system and chemicals at the site are stored in safe conditions. The BA states that the riparian areas around the compound are in good condition. The UNF has determined that the activities occurring at this site are NLAA MCR steelhead.

Frazier Helibase and Guard Station (NLAA)

The UNF maintains this site as a staging area for a helicopter used in fire suppression efforts in the area. This facility consists of an office, workshop, storage buildings, bunkhouses, and trailer pads. A wastewater treatment facility also exists. The old Frazier Guard Station cabin is also on this site and is the only structure in an RHCA (Frazier Creek). The majority of this facility is on a ridgetop. Fueling of the helicopter occur at the site, but fuel is not stored at the site. A spill plan for the site has been formulated by the UNF. The sewage system is well maintained. Due to the small scale of riparian impacts, the UNF has determined that activities at this site are NLAA MCR steelhead.

Bull Prairie Administration Site Building Disposal (NLAA)

The UNF proposes to burn a deteriorating building on the Bull Prairie Administrative Site. This area is in the Wall Creek watershed. The building is not in an RHCA and no effects to riparian areas are expected to occur as a result of this activity. Due the lack of potential for effects to MCR steelhead or riparian areas, the UNF has determined that this activity is NLAA MCR steelhead.

2. ENDANGERED SPECIES ACT

2.1 Biological Opinion

2.1.1 Biological Information

The MCR steelhead evolutionarily significant unit (ESU) was listed as threatened under the ESA by NOAA Fisheries on March 25, 1999 (64 FR 14517). Protective regulations for MCR steelhead were issued under section 4(d) of the ESA on July 10, 2000 (65 FR 42422). Biological information concerning the MCR steelhead is found in Busby *et al.* (1996). The major drainages in the MCR steelhead ESU are the Deschutes, John Day, Klickitat, Umatilla, Walla Walla, and Yakima river systems. NOAA Fisheries (2003) has indicated that the five-year average (geometric mean) abundance of natural MCR steelhead was up from previous years' basin

³ Stream flow data from USGS website (available at: www.usgs.gov)

estimates in the ESU. The Klickitat, Yakima, Touchet, and Umatilla systems are all well below their interim abundance targets (Table 4). The John Day and Deschutes are at or above their interim targets for abundance, however there is significant concern regarding the straying of fish into the Deschutes system from other ESUs (Table 4). The productivity estimate (λ) of the MCR ESU is approximately 0.98, indicating that the productivity of MCR steelhead is slightly below its target of 1.0. NOAA Fisheries biological review team (BRT) has determined that the MCR ESU is likely to become endangered because of stock abundance and long-term productivity being depressed within the ESU.

The John Day River (JDR) is the largest river system in the range of MCR steelhead that is free of dams. There is currently no artificial propagation of steelhead in the system, and runs are driven almost exclusively by native stocks, making the JDR system unique within the ESU. However, there is some straying of hatchery fish into the JDR system from the Columbia River (Unterwegner and Gray 1997). The ODFW estimates yearly returns of adult steelhead to the JDR basin from 3,900 to 36,400, with estimated escapement averaging 13,988 adults since 1987. NOAA Fisheries (2003) states that while the JDR system has met or exceeded interim abundance targets for the last 5 years, the long-term trend for abundance is still downward.

Table 4. Interim Abundance Targets for the MCR Steelhead ESU (adapted from NOAA Fisheries 2003).

ESU/Spawning Aggregations*	Interim Abundance Targets	Interim Productivity Objective
Walla-Walla	2,600	Middle Columbia ESU populations are currently well below recovery levels. The geometric mean Natural Replacement Rate (NRR) will therefore need to be greater than 1.0
Umatilla	2,300	
Deschutes (Below Pelton Dam Complex)	6,300	
John Day		
North Fork	2,700	
Middle Fork	1,300	
South Fork	600	
Lower John Day	3,200	
Upper John Day	2,000	

*Populations in bold are addressed in this Opinion

Trend data for MCR steelhead in the NFJDR show a decline in the MCR steelhead population. The BA simply references a decline in steelhead production, while Busby *et al.* (1999) notes a short-term decline of -1.2 %, and a long-term decline of -2.5%. Busby *et al.* (1999) also note that the overall decline of MCR steelhead in the JDR basin is of particular concern because the basin has historically supported the largest population of native, naturally-spawning summer

steelhead in the MCR ESU. The current population status and trends for MCR steelhead are described in Busby *et al.* (1996), NOAA Fisheries (1997), and NOAA Fisheries (1999b). Annually declining trends of -1.2% in the short term, and -2.5% in the long term were noted for MCR steelhead in the NFJDR (NOAA Fisheries, 1999b).

According to the BA, MCR steelhead adults enter the John Day River as early as September with peak migration in October, depending on water temperature. Spawning in the John Day basin occurs from March to mid-June. Fry emergence timing depends on time of spawning and water temperature during egg incubation, but usually occurs from late May through June. Essential features of the adult spawning, juvenile rearing, and adult and juvenile migratory habitat for the species are: (1) Substrate, (2) water quality, (3) water quantity, (4) water temperature, (5) water velocity, (6) cover/shelter, (7) food (juvenile only), (8) riparian vegetation, (9) space, and (10) safe passage conditions (Bjornn and Reiser, 1991; NOAA Fisheries, 1996b; Spence *et al.*, 1996). The proposed and ongoing actions addressed in this Opinion may affect all of the above factors.

2.1.2 Evaluating Proposed Actions

The standards for determining jeopardy are set forth in section 7(a)(2) of the ESA as defined by 50 CFR Part 402 (the consultation regulations). In conducting analyses of habitat-altering actions under section 7 of the ESA, NOAA Fisheries uses the following steps: (1) Consider the status and biological requirements of the species; (2) evaluate the relevance of the environmental baseline in the action area to the species' current status; (3) determine the effects of the proposed or continuing action on the species; (4) consider cumulative effects; and (5) determine whether the proposed action, in light of the above factors, is likely to appreciably reduce the likelihood of species survival in the wild or adversely modify its critical habitat. In completing this step of the analysis, NOAA Fisheries determines whether the action under consultation, together with all cumulative effects when added to the environmental baseline, is likely to jeopardize the continued existence of the ESA-listed species or result in destruction, adversely modify their critical habitat, or both. If NOAA Fisheries finds that the action is likely to jeopardize the ESA-listed species, NOAA Fisheries must identify reasonable and prudent alternatives for the action.

NOAA Fisheries has developed guidelines for basin-level, multispecies recovery planning on which individual, species-specific recovery plans can be founded. "Basin-level" encompasses habitat, harvest, hatcheries, and hydro. The recovery planning analysis is contained in the document entitled "*Conservation of Columbia Basin Fish: Final Basinwide Salmon Recovery Strategy*" (hereafter, the Basinwide Recovery Strategy [Federal Caucus 2000]). The Basinwide Recovery Strategy will be used to guide recovery planning for MCR steelhead. The recovery plan will provide the particular statutorily required elements of recovery goals, criteria, management actions, and time estimates that are not developed in the Basinwide Recovery Strategy.

Among other things, the Basinwide Recovery Strategy calls for restoration of degraded habitats on a priority basis to produce significant measurable benefits for listed anadromous and resident fish. Immediate and long-term priorities for restoration measures relevant to this consultation include the following general habitat improvements for tributary reaches:

- Restoring tributary flows.
- Addressing passage obstructions.
- Protecting the currently productive habitat.
- Increasing the amount of habitat.
- Improve water quality.

The Basinwide Recovery Strategy also established this specific habitat improvement action priority for the JDR Basin:

- Fix flow, screening and passage problems in priority subbasins...in the...JDR Basin.

Until the species-specific recovery plans are developed, the Basinwide Recovery Strategy provides the best guidance for judging the significance of an individual action relative to the species-level biological requirements. In the absence of completed recovery planning, NOAA Fisheries strives to ascribe the appropriate significance to actions to the extent available information allows. Where information is not available on the recovery needs of the species, either through recovery planning or otherwise, NOAA Fisheries applies a conservative substitute that is likely to exceed what would be expected of an action if information were available.

2.1.3 Biological Requirements

The first step the NOAA Fisheries uses when applying the ESA section 7(a)(2) to listed steelhead is to define the species' biological requirements that are most relevant to each consultation. NOAA Fisheries also considers the current status of the listed species taking into account population size, trends, distribution and genetic diversity. To assess the current status of the listed species, NOAA Fisheries starts with the determinations made in its decision to list MCR steelhead for ESA protection and also considers new data available that is relevant to the determination.

The relevant biological requirements are those necessary for MCR steelhead to survive and recover to naturally reproducing population levels at which protection under the ESA would become unnecessary. Adequate population levels must safeguard the genetic diversity of the listed stock, enhance their capacity to adapt to various environmental conditions, and allow them to become self-sustaining in the natural environment.

For this consultation, the biological requirements are improved habitat characteristics that function to support successful adult and juvenile migration, spawning and rearing. MCR steelhead survival in the wild depends upon the proper functioning of certain ecosystem processes, including habitat formation and maintenance. Restoring functional habitats depends largely on allowing natural processes to increase their ecological function, while at the same time removing adverse impacts of current practices. In conducting analyses of habitat-altering actions and essential habitat elements, NOAA Fisheries defines the biological requirements in terms of a concept called Properly Functioning Condition (PFC) and uses a "habitat approach" in

its analysis (NOAA Fisheries 1999). The current status of the MCR steelhead, based upon their risk of extinction, has not significantly improved since the species was listed.

2.1.4 Environmental Baseline

The environmental baseline is an analysis of the effects of past and ongoing human-caused and natural factors leading to the current status of the species or its habitat and ecosystem within the action area. The “action area” is defined as “all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action” (50 CFR 402.02). The action area for this consultation is the NFJDR subbasin.

The NFJDR subbasin is contained within the JDR basin and contributes over 60% of the average annual discharge for the basin. The JDR is the longest free-flowing (*i.e.*, non-dammed) river with wild anadromous salmonid stocks in the Columbia River basin. Federal land ownership is approximately 63% (Forest Service - 60%, and BLM - 3%), and over 33% of the subbasin is privately owned. The state of Oregon manages approximately 2%, while other ownership also amounts to about 2%. Approximately 77% of the subbasin is forested land, and rangeland and pasture land accounts for about 20%. The remaining portion of the subbasin is cropland and irrigated agriculture.

In general, the current status of MCR steelhead populations in the action area is the result of several long-term, human-induced factors (*e.g.* habitat degradation, water diversions, hydropower dams) that serve to exacerbate the adverse effects of natural environmental variability from such factors as drought, floods, and poor ocean conditions. Within the action area, habitat degradation has occurred from timber harvest, road construction, mining, and livestock grazing.

Environmental baseline conditions within the action area were evaluated for the subject actions at the subbasin and watershed scale. The results of this evaluation, based on the “matrix of pathways and indicators” (MPI) described in *Making Endangered Species Act Determinations of Effect for Individual or Grouped Actions at the Watershed Scale* (NOAA Fisheries 1996), follow. This method assesses the current condition of instream, riparian, and watershed factors that collectively provide properly functioning aquatic habitat essential for the survival and recovery of the species. A few slight modifications to this method were made by the action agencies while developing the BA. The parameter referred to as pool frequency in the NOAA Fisheries document was referred to as pool frequency and quality in the BA, while the parameter referred to as pool quality in the NOAA Fisheries document was referred to as large pools in the BA. The parameter described as riparian reserves in the NOAA Fisheries document was abbreviated as RHCA in the BA. The definitions of these parameters remains consistent in both documents, the only difference is the name used to describe the parameter. The terms used in this Opinion have been altered to match those used in the BA.

The information used to establish environmental baseline conditions in this Opinion was taken from the BA as well as from other sources provided by the UNF, including watershed analyses

and environmental impact statements. Additional information on environmental baseline conditions was taken from other BAs prepared by the UNF for land management activities in the action area as well as from state agencies such as the ODFW. A summary of this information can be found in Tables 4 and 5.

NFJDR Subbasin

In the NFJDR subbasin (4th code Hydrologic Unit Code (HUC)), 5 habitat indicators in the MPI were rated as “properly functioning” and include: Chemical contaminants/nutrients, physical barriers, large pools, off-channel habitat, and disturbance history. Eleven were rated as “functioning at risk” and include: Sediment, substrate, large woody debris (LWD), pool frequency and quality, refugia, wetted width/maximum depth ratio, streambank condition, floodplain connectivity, change in peak/base flows, drainage network increase, and riparian habitat conservation areas. Two indicators, temperature and road density/location, were rated as “not properly functioning.”

Some habitat indicators that were rated as “properly functioning” for the subbasin as a whole, such as chemical contaminant/nutrients, may be functioning at a lesser condition in localized areas. For instance, in areas of concentrated mining activities, chemical contaminants such as heavy metals may be present. In addition, a chemical spill in the NFJDR in 1990 resulted in fish kills and reduced densities of aquatic invertebrates. In a similar circumstance, recent wildfires have led to localized increase in peak/base flows and degraded riparian areas by burning hardwood shrubs and other hydrophilic vegetation.

Upper Cottonwood Creek Watershed (08)

Data on habitat conditions for MCR steelhead in this watershed are largely unavailable. Surveys conducted in streams in this watershed indicated that substrate embededness was above 35% in many areas and this indicator was rated as “not properly functioning.” LWD levels were measured during these surveys and this indicator was rated “functioning at risk.” Road density was rated as “functioning at risk.” Off-channel habitat and disturbance history were rated as “properly functioning.” The UNF did not rate any other habitat indicators.

Lower Cottonwood Creek Watershed (09)

No specific information about MCR steelhead habitat elements was available for this watershed. A large percentage of this watershed is private land.

Deer Creek Watershed (11)

No specific information about MCR steelhead habitat elements was available for this watershed.

NFJDR/Copper Canyon Watershed (23)

Limited data is available on habitat conditions in this watershed. The UNF was not aware of any physical habitat barriers in this watershed and rated this indicator as “properly functioning.” Disturbance areas and RHCAs were also rated as “properly functioning.” Road density/location was rated as “not properly functioning.” The UNF did not rate the other habitat indicators due to lack of adequate information.

Wall Creek Watershed (24)

The Wall Creek watershed encompasses 62,272 acres (100 square miles) from its headwaters to its confluence with the North Fork John Day River at river mile (RM) 22.5. The Forest Service manages 41,800 acres (67%) of the watershed. Approximately half of the non-federal land acreage in the watershed is downstream of the UNF boundary. Most of the remaining non-federal lands are in the headwaters of Wilson Creek. Major tributaries to Big Wall Creek in the action area include Wilson, Indian and Porter Creeks. The Big Wall Creek watershed comprises 8% of the land in the NFJDR basin.

In the Wall Creek watershed, Big Wall, Wilson, Indian and Porter Creeks are all listed for temperature, under Section 303(d) of the Clean Water Act (CWA). Big Wall, Wilson and Porter Creeks were also 303(d) listed in 1996 for sediment problems, and Big Wall and Wilson Creeks were 303(d) listed in 1996 for habitat modification. As a correlate, six of the 18 habitat indicators in the MPI when applied to these streams were rated as “not properly functioning,” and include: Temperature, sediment, LWD, pool frequency and quality, off-channel habitat, refugia, and road density/location. An additional seven of 18 indicators were determined to be “functioning at risk” and include physical barriers, substrate, large pools, width/depth ratio, streambank condition, drainage network increase and RHCAs. The UNF was unable to make determinations for existing condition of three variables due to lack of adequate information: Floodplain connectivity, change in peak/base flows and disturbance regime. According to the BA, the only habitat indicators rated by the UNF as “properly functioning” were chemical/contaminants and disturbance history. NOAA Fisheries recently complete consultation on timber management and other restoration activities in this watershed. These activities collectively referred to as the Rimrock Ecosystem Restoration Project, were addressed in a biological opinion dated April 16, 2002 (refer to: 2001/01368).

Little Wall Creek Watershed (25)

In the Little Wall Creek watershed, six of the 18 habitat indicators in the MPI were rated as “not properly functioning” and include: Temperature, pool frequency and quality, off-channel habitat, refugia, road density/location, and RHCAs. Six habitat indicators were rated as “function at risk” and include: Sediment, substrate, LWD, large pools, width/depth ratio, and disturbance history. Two habitat indicators were rated as “properly functioning,” chemical contaminants/nutrients, and physical barriers. The UNF did not rate four indicators, streambank condition, floodplain connectivity, change in peak/base flow, and drainage network increase, due to a lack of adequate information.

Skookum Creek Watershed (26)

In the Skookum Creek watershed, seven of the 18 habitat indicators in the MPI were rated as “not properly functioning” and include: Temperature, sediment, pool frequency and quality, off-channel habitat, refugia, road density/location, and RHCAs. Five habitat indicators were rated as “function at risk” and include: Substrate, LWD, large pools, width/depth ratio, and disturbance history. Three indicators were rated as “properly functioning,” chemical contaminants/nutrients, and streambank condition. Floodplain connectivity, change in peak/base flows, and drainage

network increase were not rated by the UNF for this watershed due to a lack of adequate information.

Mallory Creek Watershed (27)

In the Mallory Creek watershed, six of 18 MPI habitat indicators were rated as “not properly functioning” and include: Temperature, pool frequency and quality, off-channel habitat, refugia, road density and location, and RHCAs. Seven habitat indicators were rate as “functioning at risk” and include: Sediment, physical habitat barriers, substrate, LWD, large pools, width/depth ratio, and disturbance history. Chemical contaminants/ nutrients and streambank condition were rated as “properly functioning.” Three habitat indicators, floodplain connectivity, change in peak/base flow, and drainage network increase, were not rated by the UNF due to a lack of adequate information.

Potamus Creek Watershed (28)

In the Potamus Creek watershed, five of the 18 MPI habitat indicators were rated as “not properly functioning” and include: Temperature, pool frequency and quality, off channel habitat, refugia, and road density, and location. Six habitat indicators were rated as “functioning at risk” and include: Sediment, substrate , LWD, large pools, width/depth ratios, and RHCAs. Three habitat indicators were rated as “properly functioning,” chemical contaminants/nutrients, physical barriers, and disturbance history. Streambank condition, change in peak/base flows, drainage network increase, and floodplain connectivity were not rated by the UNF due to a lack of adequate information.

NFJDR/Matlock Creek Watershed (29)

In the NFJDR/Matlock Creek watershed, five of the 18 habitat indicators in the MPI were rated as “not properly functioning” and include: Temperature, LWD, pool frequency and quality, road density and location, and RHCAs. One habitat indicator, drainage density increase, was rated as “functioning at risk.” Nine habitat indicators were rate as “properly functioning” and include: Sediment, chemical contaminants/nutrients, physical barriers, substrate, large pools, off-channel habitat, refugia, width/depth ratio, and streambank condition. Refugia, floodplain connectivity, change in peak/base flow, and disturbance history were not rated by the UNF due to a lack of adequate information.

Fivemile Creek Watershed (30)

In the Fivemile Creek watershed, four of the 18 habitat indicators in the MPI were rated as “not properly functioning” and include: Temperature, pool frequency and quality, road density and location, and RHCAs. Four habitat indicators were rated as “function at risk” and include: Chemical contaminants/nutrients, substrate, LWD, and drainage network increase. Four habitat indicators were rated as “properly functioning” and include: Physical barriers, off-channel habitat, width/depth ratios, and disturbance history. Six habitat indicators were not rated by the UNF due to a lack of adequate information and include: Sediment, large pools, refugia, streambank condition, floodplain connectivity, and change in peak/base flow.

The Saylor Madison ditch is present in this watershed. This ditch has an easement under the 1986 Colorado Ditch Bill, and diverts up to 25 cubic feet per second (cfs) of water from Fivemile Creek from April 1 to September 30 each year. According to the BA, this diversion has adverse effects to downstream MCR steelhead, including lethal take due to increased water temperatures during summer. The amount of take is difficult to estimate due to yearly fluctuations in flow, temperature, and rearing densities. Conditions of the easement include a stipulation that permission must be granted by the UNF before herbicides or fire are used to maintain the ditch. No specific conditions of the easement minimize or mitigate downstream effects to fishery resources in this watershed.

Deerlick Creek Watershed (31)

In the Deerlick Creek watershed, two of the 18 habitat indicators in the MPI, temperature, road density and location, were rated as “not properly functioning.” Drainage network increase was rated as “functioning at risk.” Chemical contaminants/nutrients and physical barriers were rated as “properly functioning.” The remaining habitat indicators were not rated by the UNF due to a lack of adequate information.

Owens Creek Watershed (32)

In the Owens Creek watershed, two of the 18 habitat indicators in the MPI, temperature, road density and location, were rated as “not properly functioning.” RHCAs were rated as “functioning at risk.” Chemical contaminants/nutrients, physical barrier, and drainage network increase were rated as “properly functioning.” The remaining habitat indicators were not rated by the UNF due to a lack of adequate information.

Cable Creek Watershed (33)

In the Cable Creek watershed, temperature was the only habitat indicator that was rated as “not properly functioning.” Five of the habitat indicators were rated as “functioning at risk” and include: Substrate, pool frequency and quality, change in peak/base flow, road density and location, and RHCAs. Nine habitat indicators were rated as “properly functioning” and include: Chemical contaminants/nutrients, physical barriers, LWD, large pools, off-channel habitat, width/depth ratio, streambank condition, drainage network increase, and disturbance history. Sediment, refugia, and floodplain connectivity were not rated by the UNF due to a lack of adequate information. NOAA Fisheries has completed a biological opinion for culvert sidewall replacement on Cable Creek, dated June 12, 2002 (refer to: 2002/00430). On January 14, 2003, NOAA Fisheries completed a biological opinion for fire rehabilitation activities and timber harvest in this watershed (refer to: 2002/00897).

Bridge Creek/Pine Creek Watershed (34)

In the Bridge Creek/Pine Creek watershed, three habitat indicators in the MPI were rated as “not properly functioning” and include: Temperature, road density and location, and RHCAs. Chemical contaminants/nutrients, physical barriers, and drainage network increase were rated as “properly functioning.” The remaining habitat indicators were not rated by the UNF due to a lack of adequate information.

NFJDR Watershed (35)

In the NFJDR watershed, five habitat indicators were rated as “properly functioning” (chemical contaminants/nutrients, large pools, off-channel habitat, wetted with/maximum depth ratio, and RHCAs) while sediment, physical barriers, substrate, streambank condition, floodplain connectivity, drainage network increase, road density and location, and disturbance history were rated as “functioning at risk”. Temperature, large woody debris, pool frequency and quality, were rated as “not properly functioning” while refugia, change in peak/base flows, and disturbance history were not rated due to lack of data. This watershed has been heavily impacted by mining. Many riparian areas are dominated by gravel piles left by dredge mining during the early 1900's. On July 25, 2002, NOAA Fisheries completed a biological opinion on current mining activities in this watershed (refer to: 2000/01459). The mining activities addressed in this biological opinion are considered as part of the environmental baseline of this watershed. On January 14, 2003, NOAA Fisheries completed a biological opinion for fire rehabilitation activities and timber harvest in this watershed (refer to: 2002/00897).

Desolation Creek Watershed (36)

In the Desolation Creek watershed, temperature was the only habitat indicator rated as “not properly functioning.” Six habitat indicators were rate as “functioning at risk” and include: Sediment, substrate, pool frequency and quality, streambank condition, drainage network increase, and road density and location. Nine habitat indicators were rated as “properly functioning” and include: chemical contaminants/nutrients, physical barriers, LWD, large pools, off-channel habitat, width/depth ratio, floodplain connectivity, disturbance history, and RHCAs. One habitat indicator, refugia, was not rated due to a lack of adequate information. On May 29, 2002, NOAA Fisheries consulted on culvert replacement and camp site relocation in this watershed (refer to: 2001/01173).

Meadow Brook Watershed (37)

In the Meadow Brook watershed, three habitat indicators, temperature, sediment, and road density and location were rated as “not properly functioning.” Drainage network increase was rate as “functioning at risk.” Five habitat indicators were rated as properly functioning and include: Chemical contaminants/nutrients, physical barriers, substrate, disturbance history, and RHCAs. The remaining habitat indicators were not rated by the UNF due to a lack of adequate information.

Granite Creek Watershed (93)

In the Granite Creek watershed, floodplain connectivity, road density and location were rated as “not properly functioning.” Floodplain connectivity was rated as “not properly functioning” due to the presence of dredge piles from historic mining operations. Many of these historic dredge piles are positioned very near the stream and prevent the stream from overflowing into the floodplain during high flow events. Nine habitat indicators were rated as “functioning at risk” and include: Temperature, sediment, chemical contaminants/nutrients, physical barriers, substrate, LWD, pool frequency and quality, drainage network increase, and RHCAs. Although the UNF rated chemical contaminants/ nutrients as “functioning at risk,” waste from abandoned mine sites may be having serious negative effects on water quality in this watershed. ODFW

biologists have observed dead fish and adult fish with gill lesions in the streams of this watershed (Wayne Wilson, ODFW, pers. comm.). Although the cause of this mortality is not certain, preliminary results from pathology investigations indicate mercury poisoning may be a contributing factor. Although recent surveys conducted by the UNF and U.S. Environmental Protection Agency (EPA) indicated that mercury was not present in high enough concentrations known to cause these types of effects, conditions at abandoned mine sites and abatement ponds may change yearly, increasing the amount of heavy metals released. Ongoing research may provide more information about this situation in the future.

Large pools, off-channel habitat, wetted width/maximum depth ratio, streambank condition, and disturbance history were rated as “properly functioning.” NOAA Fisheries completed a biological opinion on current mining activities in this watershed on July 25, 2003 (refer to: 2000/01459). The mining activities addressed in that biological opinion are considered as part of the environmental baseline of this watershed. Refugia, change in peak/base flows, and disturbance regime were not rated due to lack of adequate information. The City of Granite water supply system was consulted on by NOAA Fisheries (refer to: 1999/01876). Approximately 1 cfs of water is removed from Granite Creek to provide a municipal water supply.

The Pete Mann ditch system is in the Granite Creek watershed. This complex of ditches was originally constructed in the late 1800's to deliver water to local mines. Currently, the ditch system delivers water to both mines and land irrigated for agriculture. The Pete Mann ditch system often completely diverts Lightning Creek, Salmon Creek, and the East Fork Clear Creek (all MCR steelhead streams) into the Burnt River basin, a non-anadromous basin. Although the Forest Service did not rate change in peak/base flows, it is likely that this indicator is functioning either “at risk” or “not properly functioning” due to the presence of this ditch system. The Forest Service has provided recent information which indicates that there is a Federal nexus (Special Use Permit) whereby section 7 consultation is required on portions of this ditch system. The UNF included information about this ditch in the BA, but later requested that this action be removed from the BA. As such, there will be a future Federal action and section 7 consultation to address some portions of this ditch. Currently, portions of the system may be operating without a permit during the irrigation season. However, at this time, information about the exact amount of flow being removed from the diverted streams is unavailable. This ditch system is in the headwaters of the Granite Creek watershed. The area where the ditch system is present is upstream of the portion of this watershed used by MCR steelhead for spawning and rearing (T. Unterwegner, ODFW, pers. comm.) For this reason, the diversion structures and headgates associated with this ditch system do not serve as passage barriers for MCR steelhead, however, the reduction in flows resulting from the water diversion has negative impacts to the MCR steelhead rearing habitat in this watershed downstream of the diversions.

The UNF and ODFW have recently completed restoration projects in this watershed. These efforts include flattening mine tailing piles to re-connect stream channels with their floodplains, and planting hardwoods in riparian areas.

Upper NFJDR Watershed (94)

In the Upper NFJDR watershed, substrate and pool frequency and quality were rated as “not properly functioning.” Temperature, sediment, chemical contaminants/nutrients, large woody debris, streambank stability, and drainage network increase were rated as “functioning at risk.” Large pools, off-channel habitat, and road density and location were rated as “properly functioning”. Physical barriers, wetted width/maximum depth ratio, floodplain connectivity, change in peak/base flows, disturbance history, RHCAs, and disturbance regime were not rated due to lack of adequate information. Much of this watershed is in the NFJDR Wilderness Area. This watershed has been mined extensively in the past and some mining operations are occurring at the present time. NOAA Fisheries completed a biological opinion on mining activities in this watershed on July 25, 2002 (refer to: 2000/01459). The mining activities addressed in this biological opinion are considered as part of the environmental baseline of this watershed.

Big Creek Watershed (95)

In the Big Creek watershed, one habitat indicator, temperature, was rated as “not properly functioning.” Streambank condition was rated as “functioning at risk.” Eight habitat indicators were rated as “properly functioning” and include: Chemical contaminants/nutrients, physical barriers, pool frequency and quality, large pools, drainage network increase, road density and location, disturbance history, and RHCAs. The remaining habitat indicators were not rated due to a lack of adequate information. Much of this watershed is in the NFJDR Wilderness Area. On January 14, 2003, NOAA Fisheries completed a biological opinion for fire rehabilitation activities and timber harvest in this watershed (refer to: 2002/00897).

Hidaway Creek Watershed (96)

In the Hidaway Creek watershed, two habitat indicators, temperature and road density and location, were rated as “not properly functioning.” Pool frequency and quality, drainage network increase, and RHCAs were rated as “functioning at risk.” Nine habitat indicators were rated as “properly functioning” and include: Chemical contaminants/nutrients, physical barriers, substrate, LWD, large pools, off-channel habitat, width/depth ratio, floodplain connectivity, and disturbance history. Refugia and change in peak/base flow were not rated due to a lack of adequate information. On January 14, 2003, NOAA Fisheries completed a biological opinion for fire rehabilitation activities and timber harvest in this watershed (refer to: 2002/00897).

Upper Camas Creek Watershed (97)

In the Upper Camas Creek watershed, temperature, road density and location, and RHCAs were rated as “not properly functioning.” Six habitat indicators were rated as “functioning at risk” and include: LWD, pool frequency and quality, off-channel habitat, streambank condition, floodplain connectivity, and drainage network increase. Five habitat indicators were rated as “properly functioning” and include: Chemical contaminants/nutrients, physical barriers, large pools, width/depth ratios, and disturbance history. Refugia and change in peak/base flow were not rated due to a lack of adequate information.

Table 4. Summary of Subbasin and Watershed (08-29) Conditions in the Action Area *

MPI Pathways	MPI Indicators	NFJDR subbasin	Watersheds									
			08	09	11	23	24	25	26	27	28	29
Water Quality	Temperature	N	U	U	U	U	N	N	N	N	N	N
	Sediment	R	U	U	U	U	A	R	N	R	R	A
	Chem/Cont.	A	U	U	U	U	A	A	A	A	A	A
Access	Physical barriers	A	U	U	U	U	R	A	A	R	A	A
Habitat Elements	Substrate Embeddedness	R	N	U	U	U	R	R	R	R	R	A
	Large Woody Debris	R	R	U	U	U	R	R	R	R	R	N
	Pool Freq./Quality	R	U	U	U	U	N	N	N	N	N	N
	Large Pools	A	U	U	U	U	A	A	R	R	R	A
	Off Channel Habitat	A	U	U	U	U	N	N	N	N	N	A
	Refugia	R	U	U	U	U	N	N	N	N	N	U
Channel Conditions & Dynamics	Width/depth ratios	R	U	U	U	U	R	A	R	R	R	A
	Streambank Condition	R	U	U	U	U	A	U	A	A	U	A
	Floodplain connectivity	R	U	U	U	U	U	U	U	U	U	U
Flow/ Hydrology	Change in Peak Base Flow	R	U	U	U	U	U	U	U	U	U	U
	Drainage Network Increase	R	U	U	U	U	U	U	U	U	U	R
Watershed Condition	Road Density and Location	N	R	U	U	N	N	N	N	N	N	N
	Disturbance History	A	U	U	U	A	R	A	R	A	A	U
	RHCAs	R	U	U	U	A	R	N	N	N	R	N

* The condition of each MPI parameter is indicated in the following manner:

A= properly functioning, R= functioning at risk, N= not properly functioning, U=data unavailable

Table 5. Summary of Subbasin and Watershed (30-97) Conditions in the Action Area *

MPI Pathways	MPI Indicators	Watersheds												
		30	31	33	34	35	36	37	93	94	95	96	97	
Water Quality	Temperature	N	N	N	N	N	N	N	R	R	N	N	N	
	Sediment	U	U	U	U	R	R	N	R	R	U	U	U	
	Chem/Cont.	R	A	A	A	A	A	A	R	R	A	A	A	
Access	Physical barriers	A	A	A	A	R	A	A	R	U	A	A	A	
Habitat Elements	Substrate Embeddedness	R	U	R	U	R	R	A	R	N	U	A	U	
	Large Woody Debris	R	U	A	U	N	A	U	R	R	U	A	R	
	Pool Freq./Quality	N	U	R	U	N	R	U	R	N	A	R	R	
	Large Pools	U	U	A	U	A	A	U	A	A	A	A	A	
	Off Channel Habitat	A	U	A	U	A	A	U	A	A	U	A	R	
	Refugia	U	U	U	U	U	U	U	U	U	U	U	U	
Channel Conditions & Dynamics	Width/depth ratios	A	U	A	U	A	A	U	U	U	U	A	A	
	Streambank Condition	U	U	A	U	R	R	U	A	R	R	U	R	
	Floodplain connectivity	U	U	U	U	R	R	U	N	U	U	A	R	
Flow/ Hydrology	Change in Peak Base Flow	U	U	R	U	U	U	U	U	U	U	U	U	
	Drainage Network Increase	R	R	A	A	R	R	R	R	R	A	R	R	
Watershed Condition	Road Density and Location	N	N	R	N	R	R	N	U	A	A	N	N	
	Disturbance History	A	U	A	U	R	R	A	A	U	A	A	A	
	RHCAs	N	U	R	N	A	A	A	R	U	A	R	N	

* The condition of each MPI parameter is indicated in the following manner:

A= properly functioning, R= functioning at risk, N= not properly functioning, U=data unavailable

2.1.5 Analysis of Effects

The effects determination in this Opinion was made using a method for evaluating current aquatic conditions, the environmental baseline, and predicting effects of actions on them. The effects of actions are expressed in terms of the expected effect (restore, maintain, or degrade) on aquatic habitat indicators in the action area.

2.1.5.1 Concurrence on NLAA activities

The UNF, WWNF, and MNF have determined that the majority of their ongoing and proposed activities occurring in the NFJDR subbasin addressed in this Opinion are NLAA MCR steelhead. These activities and corresponding effects determinations are summarized in Table 2. Specific rationale for each activities' effects determination can be found in section 1.2 of this Opinion. The action agencies have developed conservation measures, project design criteria, and other protective measures to ensure that these activities avoid adverse effects to MCR steelhead. These protective measures are described with their respective activity in section 1.2 of this Opinion.

NOAA Fisheries concurs with the NLAA effects determinations made by the UNF, WWNF, and MNF. Concurrence is based on the following considerations: (1) The ongoing and proposed activities will not result in the degradation of any aquatic habitat element essential for the survival and recovery of MCR steelhead; (2) the ongoing and proposed activities will not prevent or retard the attainment of RMOs; and (3) the ongoing and proposed activities will not result in take of MCR steelhead. Therefore, the NLAA actions are expected to have insignificant, discountable, or beneficial effects to MCR steelhead and their habitat.

2.1.5.2 Effects of Proposed and Ongoing LAA Actions

Activities Involving In-water Work

The WWNF has determined that two proposed activities involving in-water work are LAA MCR steelhead. These activities, bridge replacement and Bull Run headcut repair, will require instream operation of heavy machinery and will produce sediment plumes sufficient to cause harm or harassment of MCR steelhead.

Potential impacts to listed salmonids from the proposed action include both direct and indirect effects. Potential direct effects include mortality from exposure to suspended sediments (turbidity) and contaminants resulting for construction. Potential indirect effects include behavioral changes resulting from elevated turbidity level (Sigler *et al.* 1984, Berg and Northcote 1985, Whitman *et al.* 1982, Gregory 1988), during river bank habitat alterations.

Suspended sediment and turbidity influences on fish reported in the literature range from beneficial to detrimental. Elevated total suspended solids (TSS) conditions have been reported to enhance cover conditions, reduce piscivorous fish/bird predation rates, and improve survival. Elevated TSS conditions have also been reported to cause physiological stress, reduce growth,

and adversely affect survival. Of key importance in considering the detrimental effects of TSS on fish are the frequency and the duration of the exposure, not just the TSS concentration.

Behavioral avoidance of turbid waters may be one of the most important effects of suspended sediments (DeVore *et al.* 1980, Birtwell *et al.* 1984, Scannell 1988). Salmonids have been observed to move laterally and downstream to avoid turbid plumes (McLeay *et al.* 1984, 1987, Sigler *et al.* 1984, Lloyd 1987, Scannell 1988, Servizi and Martens 1991). Juvenile salmonids tend to avoid streams that are chronically turbid, such as glacial streams or those disturbed by human activities, unless the fish need to traverse these streams along migration routes (Lloyd *et al.* 1987). In addition, a potentially positive reported effect is providing refuge and cover from predation (Gregory and Levings 1988).

Fish that remain in turbid, or elevated TSS, waters experience a reduction in predation from piscivorous fish and birds (Gregory and Levings 1998). In systems with intense predation pressure, this provides a beneficial trade off (*e.g.*, enhanced survival) to the cost of potential physical effects (*e.g.*, reduced growth). Turbidity levels of about 23 Nephelometric Turbidity Units (NTU) have been found to minimize bird and fish predation risks (Gregory 1993). Exposure duration is a critical determinant of the occurrence and importance of physical or behavioral effects (Newcombe and MacDonald 1991). Salmonids have evolved in systems that periodically experience short-term pulses (days to weeks) of high suspended sediment loads, often associated with flood events, and are adapted to such high pulse exposures. Adult and larger juvenile salmonids may be little affected by the high concentrations of suspended sediments that occur during storm and snowmelt runoff episodes (Bjornn and Reiser 1991). However, research shows that chronic exposure can cause physiological stress responses that can increase maintenance energy and reduce feeding and growth (Redding *et al.* 1987, Lloyd 1987, Servizi and Martens 1991).

Turbidity, at moderate levels, has the potential to adversely affect primary and secondary productivity, and at high levels, has the potential to injure and kill adult and juvenile fish, and may also interfere with feeding (Spence *et al.* 1996). Newly-emerged salmonid fry may be vulnerable to even moderate amounts of turbidity (Bjornn and Reiser 1991). Other behavioral effects on fish, such as gill flaring and feeding changes, have been observed in response to pulses of suspended sediment (Berg and Northcote 1985). Fine, redeposited sediments also have the potential to adversely affect primary and secondary productivity (Spence *et al.* 1996), and to reduce incubation success (Bell 1991) and cover for juvenile salmonids (Bjornn and Reiser 1991).

Increased sedimentation may also lead to increased embeddness of spawning substrates downstream of the project. Instream work scheduled for these projects will take place during the in-water window for the area (July 15 to August 15). Due to the typically low flows present in the individual project areas during this time, sedimentation rates are expected to be minimal. Disturbance of riparian vegetation could result from operation of heavy machinery near the stream and could lead to decreased shade, increased water temperatures, and decreased streambank stability until riparian vegetation is re-established.

There is also the potential for fuel or other contaminant spills associated with use of heavy equipment in or near the stream. As with all construction activities, accidental release of fuel, oil, and other contaminants may occur. Operation of the back-hoes, excavators, and other equipment requires the use of fuel, lubricants, *etc.*, which, if spilled into the channel of a waterbody or into the adjacent riparian zone, can injure or kill aquatic organisms. Petroleum-based contaminants (such as fuel, oil, and some hydraulic fluids) contain poly-cyclic aromatic hydrocarbons (PAHs), which can be acutely toxic to salmonids at high levels of exposure and can also cause chronic lethal and acute and chronic sublethal effects to aquatic organisms (Neff 1985). Similarly, exposure to herbicides can have lethal and sublethal effects on salmonids, aquatic invertebrates, aquatic vegetation, and target and non target riparian vegetation (Spence *et al.* 1996).

Excavation in the stream channel associated with the headcut repair and bridge replacement will elevate the risk for chemical contamination of the aquatic environment within the action area. Because the potential for chemical contamination should be localized and brief, the probability of direct mortality is negligible. In-water work timing during the preferred in-water work timing period of July 15 through August 15, will minimize the risk from chemical contamination during in-water work activities. The contractor would also be required to develop, implement and monitor a site-specific pollution control plan in an effort to further minimize risk to the aquatic environment.

These adverse effects are expected to be temporary and of short duration. The maximum period of time during which construction activities will occur is one month. In the long term, all aquatic habitat factors will be maintained. The Bull Run headcut repair should result in a long-term decrease in the amount of sediment being contributed to this stream and increase bank stability by arresting further incision of the stream channel. The replacement of the bridge on Forest road 7300 will allow for more natural stream morphology at the site by reducing the amount of constriction the stream channel is currently experiencing. All habitat indicators are expected to be maintained or improved in the long term.

Fire Camps

The UNF has determined that activities at fire camps in RHCAs of fish-bearing streams is LAA MCR steelhead. Structures present at these camps such as tents, communication structures, and catering facilities will cause compaction and exposure of soil, reducing infiltration of water and potentially kill riparian vegetation. Exposing bare soil combined with the large presence of people, machinery, and vehicles will increase the chance of introducing noxious weeds to the area.

The presence of large numbers of people, vehicles, and machinery near streams will cause some rearing juvenile MCR steelhead to leave the area. When machinery and vehicles are staged or refueled in riparian areas, chemical contaminants may be introduced to streams. Locating sanitary facilities, such as portable toilets, in RHCAs increases the chance spills of contaminants could reach local streams.

Use of dust abatement chemicals (magnesium chloride and lignon sulfonate) near streams can have negative effects on water quality. Heffner (1996) concluded that although the overall risk to aquatic life from using dust abatement compounds is low, in certain circumstances, their use may cause some adverse effects. Salmonids have been shown to be able to withstand chloride level of approximately 400 parts per million (ppm) (Heffner 1996). However, chloride levels in waterbodies receiving runoff from application areas would probably drop to 70 ppm where a 3 to 50 foot buffer between the application site and the water exists (Schwendddman 1981). Plant life in the direct vicinity of the application site are at the more risk, as application of dust abatement compounds can cause necrosis of plant tissues (Heffner 1996).

Lignon sulfonate has to be present in relatively high levels to cause mortality in rainbow trout (the lethal concentration required to kill 50% of individuals in 48 hours (LC_{50}) has been calculated to be between 5,200 and 7,500 ppm), but it does have some adverse sublethal effects at much lower concentrations (Heffner 1996). A retarding effect on growth was observed at concentrations as low as 160 ppm because lignon sulfonate seems to impair the activity of several digestive enzymes. It can be expected however, that any sublethal effects would be short lived, as lignon sulfonate is water soluble, does not bioaccumulate, and is usually only present during short periods when runoff transports it to streams. Lignon sulfonate can also raise biological oxygen demand (BOD) in receiving waterbodies although this seems to be more of a concern when the exposure is chronic as in the case streams of receiving pulp mill effluent.

The UNF has protective measures in place to minimize the above described adverse effects. However, given the nature of the activity and its proximity to streams and riparian areas, completely preventing these effects from occurring is highly unlikely. Streambank stability, water quality, and general riparian health are expected to be degraded in localized area due to this activity. Use of any one camp during a given year is low.

Livestock Grazing

The BA provided to NOAA Fisheries on January 5, 2000, contained activity descriptions and effects analysis for livestock grazing on several allotments the UNF and BLM had determined to be LAA MCR steelhead. These allotments included that FG Whitney private land term permit (this does not include the FG Whitney allotment addressed in this Opinion, this is a separate allotment), Trout Meadows allotment, Pearson Unit of the Texas Bar allotment, and several BLM allotments. The FG Whitney private land term permit was cancelled during the consultation process. The BLM has deferred grazing on their allotments in the NFJDR subbasin until allotment management plans are completed for these allotment. During consultation, the MNF changed the determination for the Hamilton allotment from NLAA to LAA for MCR steelhead (see section 1.1 of this Opinion).

The remaining allotments, Trout Meadows and the Pearson unit of the Texas Bar allotment were discussed in detail during consultation. A comprehensive analysis of the effects of livestock grazing was conducted to address the effect of grazing on these allotments to MCR steelhead and their habitat. The results of this analysis are presented below. Ultimately, concerns over adverse effects to MCR steelhead and their habitat from grazing on these allotments led the UNF to

suspend grazing on the Trout Meadows allotment and defer grazing on the Pearson unit of the Texas Bar allotment. Grazing on the Hamilton allotment is the remaining LAA range activity.

Impacts of livestock grazing to stream habitat and fish populations can be separated into direct and indirect effects. Direct effects are those which contribute to the immediate loss or harm to individual fish or embryos (*e.g.*, directly stepping on a fish, trampling a redd that results in the actual destruction of embryos, or dislodging the embryos from the protective nest and ultimately destroying eggs). Indirect effects are those impacts which occur at a later time, causing loss of specific habitat features (*e.g.*, undercut banks, sedimentation of spawning beds), localized reductions in habitat quality (*e.g.*, sedimentation, loss of riparian vegetation, changes in channel stability and structure), and, ultimately, cause loss or reductions of entire populations of fish, or widespread reductions in habitat quantity and/or quality.

Direct Effects of Livestock Grazing to MCR Steelhead

Direct effects of livestock grazing may occur when livestock enter the streams occupied by MCR steelhead to loaf, drink, or cross the stream. During the early phases of their life cycle, MCR steelhead have little or no capacity for mobility, and large numbers of embryos or young are concentrated in small areas. Livestock entering fish-spawning areas can trample redds, and destroy or dislodge embryos and alevins. Belsky *et al.* (1997) provide a review of these direct influences on stream and riparian areas. Wading in streams by livestock can be assumed to induce mortality on eggs and pre-emergent fry at least equal to that demonstrated for human wading (Roberts and White 1992). In this investigation, a single wading incident upon a simulated spawning bed induced 43% mortality of pre-hatching embryos. In a recent (July 12, 2000) occurrence of unauthorized livestock grazing in the Sullens Allotment on the MNF, five out of five documented MCR steelhead redds in a meadow area of a Rosgen C-type stream channel (Rosgen 1996) in Squaw Creek (Middle Fork John Day River subbasin) were trampled by cattle (U.S. Forest Service memorandum, August 17, 2000).

Avoidance of direct impacts to MCR steelhead spawning areas can be achieved by scheduling grazing in pastures containing spawning habitat to occur after July 15, or by excluding known spawning areas from livestock access. As mentioned above, the ODFW guidelines for the timing of in-water work in the JDR basin, which are designed to protect salmonid species, do not allow in-water work in any stream in the basin before July 15. The period during which spawning MCR steelhead adults may be susceptible to harassment, or eggs and pre-emergent fry susceptible to trampling by livestock, is from March 15 to July 15 in the JDR basin streams. In some allotments or pastures, there are pre-existing natural topographic, geologic, and vegetative features, or high spring water flows that naturally exclude or minimize livestock use from spawning areas. Other forms of direct take (*e.g.*, harassment of MCR steelhead by livestock when livestock enter or are beside occupied habitat, resulting in MCR steelhead behavioral modifications) are more difficult to address. Direct take in the form of harassment can be reduced in the long term by rangeland management that results in better riparian and in-channel habitat conditions, and create more cover and other important habitat features conducive to MCR steelhead survival and recovery.

Cattle wading into a stream to loaf, drink, or cross the stream have the potential to frighten juvenile MCR steelhead from streamside cover. Once these juveniles are frightened from cover and swim into open water, they become more susceptible to predation from larger fish and avian predators. However, NOAA Fisheries believes that the risk of mortality of juvenile salmonids due to flushing from cover by watering cattle is minimal.

Direct and Indirect Effects of Livestock Grazing to MCR Steelhead Habitat

Numerous symposia and publications have documented the detrimental effects of livestock grazing on stream and riparian habitats (Johnson *et al.* 1985; Menke 1977; Meehan and Platts 1978; Cope 1979; American Fisheries Society 1980; Platts 1981; Peek and Dalke 1982; Ohmart and Anderson 1982; Kauffman and Krueger 1984; Clary and Webster 1989; Gresswell *et al.* 1989; Kinch 1989; Chaney *et al.* 1990, Belsky *et al.* 1997). These publications describe a series of synergistic effects that can occur when cattle over-graze or impact riparian areas. Over time, woody and hydric herbaceous vegetation along a stream can be reduced or eliminated. Livestock trampling causes streambanks to collapse; without vegetation to slow water velocities, hold the soil, and retain moisture, flooding causes more erosion of streambanks, and the stream becomes wider and shallower and in some cases downcut. The water table drops, and hydric, deeply rooted herbaceous vegetation dies out and is replaced by upland species with shallower roots and less ability to bind the soil. The resulting instability in water volume, increased summer water temperature, loss of pools and habitat adjacent and connected to streambanks, and increased substrate fine sediment and cobble-embeddedness adversely affect MCR steelhead and their habitat. Specific effects to MCR steelhead habitat elements are described below.

1. Riparian Vegetation and Shade

In areas under historic season-long grazing, major vegetation changes can and have taken place with changes in livestock use. Routinely grazing an area too late in the growing season can cause adverse changes in the plant community. Individual plants are eliminated by re-grazing them during the growing season and not allowing adequate recovery after grazing. Regardless of seral stage, at least six inches of residual stubble or regrowth is recommended to meet the requirements of plant vigor maintenance, bank protection, and sediment entrapment (Clary and Webster 1989). More than six inches of stubble height may be required for protection of critical fisheries or easily eroded streambanks and riparian ecosystem function (Clary and Webster 1989). In the Blue Mountains of Eastern Oregon, regrowth of herbaceous vegetation often does not occur after July (Gillen *et al.* 1985). Consequently, livestock use of riparian vegetation in the summer and fall needs to be closely managed to ensure adequate stubble height to protect streambanks during high streamflows in winter and spring.

Over time, entire plant communities can change as a result of heavy or prolonged grazing pressure. In mountain riparian systems of the Pacific Northwest, the replacement of native bunch grass with Kentucky bluegrass has occurred in many areas. Kentucky bluegrass has established itself as a dominant species in native bunch grass meadows as a result of overgrazing and subsequent habitat deterioration. Plants in the early seral stage community do not provide as much protection for the watershed and streambanks. Many forbs and annual plants that frequently dominate early seral plant communities do not have the strong deep root systems of

the later seral perennials such as bunch grasses, sedges, rushes, shrubs, and willows. Kauffman et al. (1982) found that when grazing in moist meadows was halted, succession towards a more mesic/hydric plant community occurred.

Removal of riparian vegetation reduces habitat quality, resulting in negative impacts to fish production (Platts and Nelson 1989). Reductions in streambank cover related to overhanging vegetation, root vegetation, and undercut banks has been correlated to reduced fish production (EPA 1993). These effects are particularly evident in meadow systems, where herbaceous vegetation may provide the only shade to stream channels. Stream cover in hardwood dominated riparian systems can also be damaged, in some situations, by livestock grazing. Cattle often begin to browse woody species when herbaceous stubble heights fall below 10 cm (approximately 4 inches) (Hall and Bryant 1995). Others suggest that 10-20 cm (approximately 6-8 inches) of herbaceous residual stubble height may be needed to protect hardwoods, especially during late season grazing (Clary and Leininger 2000).

In a study of late season grazing in the Blue Mountains of Eastern Oregon, Kauffmann *et. al.* (1983) found that shrub use was generally light except on willow-dominated gravel bars. They conclude that on gravel bars, succession was retarded by livestock grazing. In a later study in the same area, Green and Kauffman (1995) found livestock disturbance and ecosystem response to be highly variable among plant communities. In areas rested from grazing in this study, abundance of undesirable non-native species decreased. They also found that in grazed areas, height, establishment, and reproduction of woody species on gravel bars was less than in ungrazed areas. These studies suggest that although livestock grazing may not have adverse effects to mature individuals of wood species such as willows, recolonization of disturbed areas such as gravel bars may be impeded by livestock grazing.

In a study of watersheds in the JDR basin, Maloney *et. al.* (1999) found that watersheds with less than 75% surface shade can exceed stream temperature standards for rainbow trout and chinook salmon. Stream temperatures in all heavily grazed watersheds in this study exceeded standards for salmonids. The authors concluded that revegetation of the streamside area with shrubs or small trees would likely result in reduced stream temperatures and an improved environment for rainbow trout and chinook salmon. They further suggest that maintenance of the integrity of the riparian zone could be achieved by using buffer strips and by more stringent control of animal use of riparian areas.

The riparian areas in the JDR are particularly sensitive to overgrazing by exotic ungulates (cattle and sheep) because the native vegetation of the grasslands west of the Rocky Mountains evolved in the absence of large herbivores for the past 2, 500 years (Mack and Thompson 1982 *cited in* Li *et al.* 1994). In contrast, grasses east of the Rocky Mountains evolved with the bison and the impact of exotic ungulates on the grass communities was not as severe (Li *et al.* 1994).

2. Streambank Stability and Channel Morphology

Removal of streambank/riparian vegetation along with mechanical bank damage reduces the structural stability of the stream channel with several resultant negative impacts to fish

productivity (EPA 1993, Platts 1990). Several studies have shown that heavy livestock grazing pressure causes significant streambank damage (Kaufman *et al.* 1983, Clary and Kinney 2002, Hackey 1989). Other studies indicate that light or moderate grazing pressure did not result in significant streambank damage (Buckhouse *et al.* 1981).

Riparian areas over-grazed by cattle often have reduced salmonid living space caused by increased stream channel widening and increased width/depth ratios (Platts and Nelson 1989, EPA 1993). When riparian areas are over-grazed, a synergistic adverse effect on streambank stability occurs. As stubble height of herbaceous vegetation along streambanks decreases, livestock eating this vegetation must move more frequently to achieve intake needs. Increased movement leads to trailing in riparian areas causing more compaction and bank damage (Clary and Lenninger 2000).

3. Water Quality

Removal of riparian vegetation from grazing results in increased insolation reaching streams, leading to cumulative increases in downstream temperatures (Barton *et al.* 1985). This is especially true for high desert watersheds, such as the John Day River basin, of the intermountain West (Platts and Nelson 1989). MCR steelhead will suffer take in the form of harm as temperatures of streams in these areas continue to exceed those suitable for steelhead rearing.

Bell (1986) reported the upper lethal temperature for steelhead to be 75.02° F with a preferred temperature range of 50-55° F. The ability of rearing MCR steelhead to tolerate temperature extremes depends to a certain degree on the fish's recent thermal history, however, research indicates that most salmonid species are at risk when temperatures exceed 73-77° F (Spence *et al.* 1996). In addition to the lethal effects of high temperatures, ectothermic salmonids rearing at temperatures near the upper lethal limit experience decreased growth because nearly all consumed food is used for metabolic maintenance (Bjornn and Reiser 1991). Temperatures exceeding the upper lethal limits may be tolerated for brief periods or fish may seek thermal refugia. Li *et al.* (1991) reported that resident rainbow trout in an Eastern Oregon stream selected natural and artificially created coldwater areas when temperatures in the main stream channel exceeded 75.2° F but showed no preference for these areas when temperatures in the main stream channel was less than 68° F. Coldwater refugia allow some MCR steelhead to persist in areas where temperatures in main stream channels exceed their upper lethal limit. However, total MCR steelhead production in stream reaches will decrease as the amount of habitat suitable for the species use decreases as temperatures increase and fish are restricted to coldwater refugia areas.

Increases in stream temperature due to removal of stream side vegetation will also have a negative effect on dissolved oxygen (DO) concentrations. As temperatures increase, oxygen solubility in water decreases and DO levels decrease. Salmonids require approximately DO level of 6 mg/L to survive, and suffer no metabolic impairment when DO levels remain at 8 mg/L (Davis 1975). Some studies have shown that salmonids may be able to withstand periods

of DO levels as low as 5 mg/L but growth, food conversion efficiency, and swimming performance will be adversely affected (Bjornn and Reiser 1995).

4. Prey Base

The coldwater communities rearing juvenile salmonids rely on require minimum DO levels of between 6 and 8 mg/L (ODEQ 1995). The aquatic invertebrates and other coldwater fish rearing juvenile steelhead rely on for food require DO levels in this range. As temperatures increase and DO levels drop, these communities shift from salmonids and less tolerant aquatic invertebrates such as mayflies and stoneflies, to a more coolwater structure dominated by sculpins and tolerant aquatic invertebrates such as chironomids. In a study of high desert streams, Tait *et al.* (1994) found that less palatable trout prey dominated the food base in warmwater stream reaches exposed to sunlight.

A study by Li *et al.* (1994), in the JDR basin, found that colder streams supported the highest standing crops of trout and had the most favorable trout: Invertebrate standing crop ratios, suggesting that colder streams in this basin have a greater trophic efficiency leading to salmonid production. Inputs of fine sediment resulting from livestock trampling banks could also reduce benthic invertebrate abundance. Studies have shown that sediment inputs resulting in substrate embeddedness of greater than one third can result in a decrease in benthic invertebrate abundance and thus a decrease in food available for juvenile salmonids (Waters 1995).

Reducing riparian vegetation can also reduce habitat for terrestrial insects, which are an important food for salmonids (Platts 1991). Riparian vegetation also directly provides organic material to the stream, which makes up for about 50% of the streams nutrient energy supply for the food chain (Cummins 1974 *cited in* Platts 1991). In headwater stream communities, riparian vegetation produces the bulk of the detritus that provides up to 90% of the organic matter necessary to support productivity in these systems (Cummins and Spangler 1987). This allochthonous material provides an important food source for aquatic insects, that in turn, become prey for salmonids. Consequently, removal of riparian vegetation can affect the diet of fish by reducing production of both terrestrial and aquatic insects (Chapman and Demory 1963).

5. Substrate and Sediment

Damage to streams in the western United States from livestock grazing is largely due to the generation of excess sediment caused by livestock overuse of riparian areas (Waters 1995). Cattle or sheep trampling streambanks and subsequent erosion adds fine sediments to stream substrates. At great risk are salmonid spawning reaches used by anadromous Pacific salmonids and inland trout (Waters 1995). Increases in fine sediment lead to greater substrate embeddedness and a decrease in interstitial spaces between gravel substrate important for MCR steelhead spawning. Increases in substrate embeddedness impair food production as described above and block refugia for young salmonids (Rinne 1990). A general reduction of the quality of spawning and rearing habitat available occurs in these circumstances. Salmonid survival at early life stage has been directly linked to the amount of surface fines in stream substrates (Rich *et al.* 1992, EPA 1993). Juvenile salmonids are dependant on clean substrate for cover,

especially for over-winter survival (EPA 1993). Successful salmonid spawning requires clean gravels with low fine sediment content (Spence *et al.* 1996).

6. Peak/ Base Streamflow

Channel downcutting caused by riparian degradation can lower local water tables and reduce the volume of base flow available in dry seasons and periods of drought (EPA 1993). Riparian vegetation has been linked to the water-holding capacity of streamside aquifers (Platts 1990). As riparian vegetation is removed by livestock grazing and streamside soils are compacted by livestock hooves, the ability of areas to retain water is decreased. As aquifers lose their capacity to hold water and slowly deliver water to the stream, differences between peak and base discharge rates increases dramatically (EPA 1993). When this occurs, high flows in the spring tend to increase in volume, leading to bank damage and erosion. Summer and fall base flows are decreased, often resulting in flows that are insufficient to provide suitable rearing habitat for juvenile salmonids. Some streams that typically flowed perennially may experience periods of no flow in the summer or fall.

7. Pool Quality/Quantity

Instream pools are important habitat for both juvenile and adult salmonids. Fish abundance is related to the diversity of habitats and number and quality of instream pools (EPA 1993). Rearing juvenile salmonids use slow water habitat found in pools, while adult salmonids make use of cover and deep water found in pools during spawning migrations. Pools with undercut banks are important rearing areas for juvenile salmonids (Bjornn and Reiser 1991). These areas provide overhead cover and water velocities ideal for both juvenile and migrating adult salmonids. Bank trampling by livestock can destroy undercut banks reducing hiding cover for fish. Introduction of fine sediments to streams can fill in pools, reducing depth and covering coarse substrates.

8. Minimizing Effects to Habitat

With the implementation of PACFISH in 1994, many riparian areas in the NFJDR subbasin have management programs in place to protect and enhance their condition. In an effort to avoid the abovementioned adverse effects that can result from improper livestock grazing, the UNF, MNF, and WWNF have made many adjustments to their range programs. Many riparian areas are now fenced to exclude cattle. According to the BA, Forest Service and BLM fishery biologists, hydrologists, and range conservationists indicate that the majority of the perennial streams on UNF, WWNF, and MNF, administered livestock grazing allotments are showing improving trends in grass, shrub growth, vigor and streambank stability. These trends are noted through general observation and documented by photographs and riparian survey data. Permittees rely on salting and herding to keep cattle away from unfenced riparian areas.

Pasture or unit rotations have been altered to minimize or eliminate the potential for livestock interference with MCR steelhead spawning. Utilization standards have been established in each unit or pasture containing riparian areas. Permittees are expected to meet these standards each grazing season and the land management agencies rely on a monitoring plan to ensure compliance with these standards.

Compliance or implementation monitoring is essential to the success of any grazing program (Leonard *et al.* 1997). According to the BA, the UNF, MNF, and WWNF will adaptively manage allotments, changing livestock numbers, season of use, or rotation patterns if riparian utilization standards are not met. These agencies will rely on the IIT implementation monitoring program (USDA and USDI 2002) to direct monitoring efforts in the NFJDR.

Allotment-Specific Effects of Livestock Grazing

Hamilton Allotment

Turnout of livestock in this allotment occur before July 15. Livestock are turned out on the top of ridges away from streams. However, there are no fences and limited topographical features that keep livestock away from portions of the East Fork of Deer Creek. There is more than a negligible chance that livestock may interfere with MCR steelhead spawning activities in this stream. This may include trampling redds or disturbing adult fish during spawning. In addition, this allotment did not meet utilization standards in 2002. Residual stubble height was less than 4 inches, bank damage exceeded 10%, and shrub use was moderate. For grazing in 2003, the season of use will be reduced by 10 days and the MNF will conduct mid-season move trigger monitoring to ensure compliance with utilization standards.

Frazier Summer Homes SUP

The location of the summer residences authorized by this permit is likely to cause adverse effects to riparian area of Frazier Creek. The removal of vegetation associated with the maintenance of these structures is expected to reduce the natural function of riparian vegetation. Reductions in shade and sediment filtering capacity as well as reductions in inputs of allochthonous material can be expected from removing riparian vegetation in these areas. The removal of water for domestic use from spring sources is expected to decrease the amount of cool ground water reaching Frazier Creek and thus have adverse effects on temperature. Placing structures near (50 feet or closer) to streams and removing riparian vegetation may also alter floodplain function. Reducing floodplain roughness by clearing riparian vegetation can alter flooding patterns and stream channel morphology.

The location of septic systems close to streams and riparian areas is expected to increase the chance of sewage spills that could adversely affect water quality. Currently, information available in the BA and developed during consultation is inadequate to determine the probability of a sewage spill occurring. Other riparian habitat components are expected to be maintained in the long term at this site.

2.1.6 Cumulative Effects

“Cumulative effects” are defined in 50 CFR 402.02 as those effects of “future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation.” The “action area” for this consultation is the entire NFJDR subbasin from the headwaters where these activities are downstream to the

confluence of the NFJDR and the Middle Fork John Day River. These streams contain spawning, rearing, or migratory habitat for MCR steelhead.

The BA identifies road building and maintenance, timber harvest, mining, livestock grazing, agricultural, recreation and tourism, and water use and control as non-federal actions that are reasonably certain to occur within the action area. It identifies risks to MCR steelhead from these activities as being either low, moderate, or high. The actions that were rated having a high risk to MCR steelhead were road building and maintenance, timber harvest, mining, livestock grazing, and agriculture. It was noted that effects from recreation and tourism were “limited for the most part” while water use and control was not rated. The primary rationale behind the high ratings was the lack of Federal regulatory control over these activities and the uncertainty about the potential effects that might be caused by these activities.

Recreational fishing for adult MCR steelhead occurs throughout the NFJDR subbasin. ODFW regulations limit the fishing season and require that all wild MCR steelhead be released unharmed. However, hooking mortality and injury occurs to some fish that are caught by anglers. The same situation exists for juvenile MCR steelhead throughout the subbasin, as there is no way for anglers to distinguish them from resident rainbow trout they are legally fishing for.

In addition to mining that occurs on Federal lands in the action area, there is also a significant amount of mining occurring on private lands throughout the watersheds of the NFJDR subbasin. The Granite Creek watershed includes the Alamo Mining District which is characterized by many placer and lode mines. The extent of private mining actions is not specifically analyzed in the BA but field reviews by NOAA Fisheries biologists suggest that a significant amount of private land mining activity still takes place.

Another non-federally regulated activity that takes place in the Granite Creek, Upper NFJDR, and NFJDR watersheds is small scale recreational suction dredging. The extent of these activities is not referenced in the BA. Although this activity is regulated by the state of Oregon, it can still have adverse effects to MCR steelhead or their habitat. One potential effect from recreational dredging is the de-stabilization of riffles and the filling of pools (Harvey and Lisle, 1998). The presence of a small number of recreational dredges would not likely disrupt stream processes but the combined effects of a large number of recreational dredges operating in a stream within a single season could have significant adverse effects.

Significant improvement in MCR steelhead reproductive success outside of federally-administered land is unlikely without changes in mining, grazing, agricultural, and other practices occurring within these non-federal riparian areas in the NFJDR subbasin. Until improvements in non-federal land management practices are actually implemented, NOAA Fisheries assumes that future private and state actions will continue at similar intensities as in recent years.

2.1.7 Conclusion

NOAA Fisheries has determined when the effects of the proposed LAA actions addressed in this Opinion are added to the environmental baseline and cumulative effects occurring in the action area, they are not likely to jeopardize the continued existence of MCR steelhead. This conclusion was reached primarily because: (1) The use of conservation measures described above in detail in section 1.2 of this Opinion, will ensure potential adverse effects from in-water work such as turbidity, minor increases in sedimentation, and harassment of MCR steelhead will be short-term and limited in scale; (2) riparian disturbance and harassment of MCR steelhead caused by establishing fire camps in RHCAs will be limited in scale and will only occur at each location identified in the BA once every few years; (3) reduction in length of season of use for the Hamilton allotment and additional monitoring will reduce the likelihood of utilization standards not being met and disturbance of spawning activities of MCR steelhead is expected to be minimal; (4) riparian disturbance associated with the issuance of the Frazier summer homes SUP is expected to be minimal and very limited in scale. Thus, although habitat conditions in some watersheds of the NFJDR subbasin are not ideal for the survival and recovery of MCR steelhead, the proposed actions are not expected to impair currently properly functioning habitats, appreciably reduce the functioning of already impaired habitats, or retard the long-term progress of impaired habitats toward proper functioning condition essential to the long-term survival and recovery at the population or ESU scale.

2.1.9 Conservation Recommendations

Section 7(a)(1) of the ESA directs Federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the threatened and endangered species. Conservation recommendations are discretionary measures suggested to minimize or avoid adverse effects of proposed actions on listed species or to develop additional information.

1. Continue restoration efforts to improve MCR steelhead habitat in the Granite Creek watershed. Removing and leveling mine tailings piles will allow streams to reconnect with their floodplains, allowing for more natural stream morphology. Planting riparian vegetation will increase shade and lead to increased bank stability.
2. Investigate water quality problems in the Granite Creek watershed and implement solutions to eliminate contaminants coming from abandoned mine sites. Reducing heavy metal contamination will lead to improved water quality in this system and reduce the chance of fish kills and other adverse effects these contaminants can have on aquatic life. Support efforts to determine if mine wastes are contributing to mercury levels in the Granite Creek system.
3. Continue fencing riparian areas to exclude livestock wherever possible throughout the NFJDR subbasin. Numerous studies have found that excluding livestock from riparian areas can lead to rapid recovery of degraded riparian conditions and/or protect properly functioning riparian communities.

4. Investigate the status of all federally-permitted water diversions in the NFJDR subbasin. Initiate ESA section 7 consultation on all permits where the Forest Service has discretion over permits. This may include SUPs and pending Colorado Ditch Bill easements.

2.1.10 Reinitiation of Consultation

Reinitiation of consultation is required if: (1) The action is modified in a way that causes an effect on the listed species that was not previously considered in the BA and this Opinion, (2) new information or project monitoring reveals effects of the action that may affect the listed species in a way not previously considered, (3) a new species is listed or critical habitat is designated that may be affected by the action, or (4) if the amount or extent of take specified in the Incidental Take Statement is exceeded or expected to be exceeded. (50 CFR. 402.16). The UNF, MNF, and WWNF may also be required to reinitiate consultation if the proposed actions are not consistent with conservation measures developed through the pending consultation on land and resource management plans for Federal land management units in the Middle and Upper Columbia River Basins.

2.2 Incidental Take Statement

The ESA at section 9 [16 USC 1538] prohibits take of endangered species. The prohibition of take is extended to threatened anadromous salmonids by section 4(d) rule [50 CFR 223.203]. Take is defined by the statute as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.” [16 USC 1532(19)] Harm is defined by regulation as “an act which actually kills or injures fish or wildlife. Such an act may include significant habitat modification or degradation which actually kills or injures fish or wildlife by significantly impairing essential behavior patterns, including, breeding, spawning, rearing, migrating, feeding or sheltering.” [50 CFR 222.102] Harass is defined as “an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering.” [50 CFR 17.3] Incidental take is defined as “takings that result from, but are not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or applicant.” [50 CFR 402.02] The ESA at section 7(o)(2) removes the prohibition from any incidental taking that is in compliance with the terms and conditions specified in a section 7(b)(4) incidental take statement [16 USC 1536].

An incidental take statement specifies the impact of any incidental taking of threatened species. It also provides reasonable and prudent measures that are necessary to minimize impacts and sets forth terms and conditions with which the action agency must comply to implement the reasonable and prudent measures.

2.2.1 Amount or Extent of the Take

NOAA Fisheries anticipates that the proposed LAA actions are reasonably certain to result in incidental take of species listed in this Opinion because of detrimental effects from the LAA activities addressed in this Opinion. NOAA Fisheries anticipates that the activities involving in-water work are reasonably certain to result in incidental take of MCR steelhead because of detrimental effects from increased sediment (non-lethal). It is also possible that some incidental take may result from the in-water work (lethal), although this is expected to be minimal. In addition, the activities involving in-water work will result in a minor amount of riparian disturbance at the construction site. Establishing fire camps in RHCAs will cause riparian disturbance and increased activity near streams is reasonably certain to result in harassment (non-lethal) of MCR steelhead. Livestock grazing on the Hamilton allotment will result in some localized degraded riparian disturbance, interference with MCR steelhead spawning (lethal and non-lethal), and harassment of rearing MCR steelhead juveniles (non-lethal) although this is expected to be minimal. The issuance of the Frazier Summer Homes SUP will result in a minor amount of riparian disturbance (non-lethal).

Because of the inherent biological characteristics of aquatic species such as MCR steelhead, the likelihood of discovering take attributable to these actions is very small. Effects of actions such as those addressed in this Opinion are largely unquantifiable in the short term, and may not be measurable as long-term effects on the species' habitat or population levels. Therefore, even though NOAA Fisheries expects some incidental take to occur due to the actions covered by this Opinion, the best scientific and commercial data available are not sufficient to enable NOAA Fisheries to estimate a specific amount of incidental take of listed fish at any life stage.

2.2.2 Effect of Take

In this Opinion, NOAA Fisheries determines that this level of anticipated take is not likely to result in jeopardy to MCR steelhead.

2.2.3 Reasonable and Prudent Measures

NOAA Fisheries believes that the following reasonable and prudent measures are necessary and appropriate to minimize take of the above species. Minimizing the amount and extent of take is essential to avoid jeopardy to the listed species. The UNF, MNF, and WWNF in respect to their proposed or ongoing activities addressed in this Opinion, shall:

1. Minimize the likelihood of incidental take of MCR steelhead resulting from in-water work associated with the Bull Run headcut repair and bridge replacement on Forest road 7300.
2. Minimize the likelihood of incidental take of MCR steelhead resulting from activities taking place in fire camps in the RHCAs of fish-bearing streams.

3. Minimize the likelihood of incidental take of MCR steelhead resulting from livestock grazing activities on the Hamilton allotment.
4. Minimize the likelihood of incidental take of MCR steelhead resulting from activities authorized by the Frazier Summer Homes SUP

2.2.4 Terms and Conditions

To be exempt from the prohibitions of section 9 of the ESA, The UNF, WWNF, and MNF must comply with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary.

1. To implement reasonable and prudent measure #1, the UNF and WWNF shall ensure that:
 - a. Timing of in-water work. Work within the active channel will be completed during the preferred in-water work period for streams in the NFJDR subbasin (July 15 to August 15) unless otherwise concurred with in writing by NOAA Fisheries.
 - b. Cessation of work. Project operations will cease under high flow conditions that may result in inundation of the project area, except for efforts to avoid or minimize resource damage.
 - c. Fish screens. All water intakes used for a project, including pumps used to isolate an in-water work area, will have a fish screen installed, operated and maintained according to NOAA Fisheries' fish screen criteria.⁴
 - d. Fish passage. Passage will be provided for any adult or juvenile salmonid species present in the project area during construction, and after construction for the life of the project.
 - e. Pollution and Erosion Control Plan. A Pollution and Erosion Control Plan will be prepared and carried out to prevent pollution related to construction operations. The plan must be available for inspection on request by NOAA Fisheries.
 - i. Plan Contents. The Pollution and Erosion Control Plan must contain the pertinent elements listed below, and meet requirements of all applicable laws and regulations.
 - (1) Practices to prevent erosion and sedimentation associated with access roads, stream crossings, construction sites, borrow pit operations, haul roads, equipment and material storage sites, fueling operations and staging areas.

⁴ National Marine Fisheries Service, *Juvenile Fish Screen Criteria* (revised February 16, 1995) and *Addendum: Juvenile Fish Screen Criteria for Pump Intakes* (May 9, 1996) (guidelines and criteria for migrant fish passage facilities, and new pump intakes and existing inadequate pump intake screens) (<http://www.nwr.noaa.gov/1hydroweb/hydroweb/ferc.htm>).

- (2) Practices to confine, remove and dispose of excess concrete, cement and other mortars or bonding agents, including measures for washout facilities.
 - (3) A description of any hazardous products or materials that will be used for the project, including procedures for inventory, storage, handling, and monitoring.
 - (4) A spill containment and control plan with notification procedures, specific clean up and disposal instructions for different products, quick response containment and clean up measures that will be available on the site, proposed methods for disposal of spilled materials, and employee training for spill containment.
 - (5) Practices to prevent construction debris from dropping into any stream or waterbody, and to remove any material that does drop with a minimum disturbance to the streambed and water quality.
- ii. Inspection of erosion controls. During construction, all erosion controls must be inspected daily during the rainy season and weekly during the dry season to ensure they are working adequately.⁵
 - (1) If inspection shows that the erosion controls are ineffective, work crews must be mobilized immediately to make repairs, install replacements, or install additional controls as necessary.
 - (2) Sediment must be removed from erosion controls once it has reached 1/3 of the exposed height of the control.
- f. Preconstruction activity. Before significant⁶ alteration of the project area, the following actions must be completed.
 - i. Marking. Flag the boundaries of clearing limits associated with site access and construction to prevent ground disturbance of critical riparian vegetation, wetlands and other sensitive sites beyond the flagged boundary.
 - ii. Emergency erosion controls. Ensure that the following materials for emergency erosion control are onsite.
 - (1) A supply of sediment control materials (*e.g.*, silt fence, straw bales⁷).
 - (2) An oil-absorbing, floating boom whenever surface water is present.
 - iii. Temporary erosion controls. All temporary erosion controls must be in-place and appropriately installed downslope of project activity within the riparian area until site restoration is complete.

⁵ "Working adequately" means no turbidity plumes are evident during any part of the year.

⁶ "Significant" means an effect can be meaningfully measured, detected or evaluated.

⁷ When available, certified weed-free straw or hay bales must be used to prevent introduction of noxious weeds.

- g. Temporary stream crossings.
 - (1) The number of temporary stream crossings must be minimized.
 - (2) Temporary road crossings must be designed as follows.
 - (a) A survey must identify and map any potential spawning habitat within 300 feet downstream of a proposed crossing.
 - (b) No stream crossing may occur at known or suspected spawning areas, or within 300 feet upstream of such areas if spawning areas may be affected.
 - (c) The crossing design must provide for foreseeable risks (*e.g.*, flooding and associated bedload and debris) to prevent the diversion of streamflow out of the channel and down the road if the crossing fails.
 - (d) Vehicles and machinery must cross riparian areas and streams at right angles to the main channel wherever possible.
 - ii. Obliteration. When the project is completed, all temporary access roads or paths must be obliterated, the soil must be stabilized, and the site must be revegetated. Temporary roads or paths in wet or flooded areas must be abandoned and restored as necessary by the end of the in-water work period.
- h. Heavy Equipment. Use of heavy equipment will be restricted as follows:
 - i. Choice of equipment. When heavy equipment must be used, the equipment selected must have the least adverse effects on the environment (*e.g.*, minimally-sized, rubber-tired).
 - ii. Vehicle staging. Vehicles must be fueled, operated, maintained and stored as follows.
 - (1) Vehicle staging, cleaning, maintenance, refueling, and fuel storage must take place in a vehicle staging area placed 150 feet or more from any stream, waterbody or wetland.
 - (2) All vehicles operated within 150 feet of any stream, waterbody or wetland must be inspected daily for fluid leaks before leaving the vehicle staging area. Any leaks detected must be repaired in the vehicle staging area before the vehicle resumes operation. Inspections must be documented in a record that is available for review on request by NOAA Fisheries.
 - (3) All equipment operated instream must be cleaned before beginning operations below the bankfull elevation to remove all external oil, grease, dirt, and mud.
 - iii. Stationary power equipment. Stationary power equipment (*e.g.*, generators, cranes) operated within 150 feet of any stream, waterbody or wetland must be diapered to prevent leaks, unless otherwise approved in writing by NOAA Fisheries.
- i. Site preparation. Native materials will be conserved for site restoration.
 - i. If possible, native materials must be left where they are found.

- ii. Materials that are moved, damaged or destroyed must be replaced with a functional equivalent during site restoration.
 - iii. Any large wood⁸, native vegetation, weed-free topsoil, and native channel material displaced by construction must be stockpiled for use during site restoration.
- j. Earthwork. Earthwork (including drilling, excavation, dredging, filling and compacting) will be completed as quickly as possible.
 - i. Site stabilization. All disturbed areas must be stabilized, including obliteration of temporary roads, within 12 hours of any break in work unless construction will resume work within 7 days between June 1 and September 30, or within 2 days between October 1 and May 31.
 - ii. Source of materials. Boulders, rock, woody materials and other natural construction materials used for the project must be obtained outside the riparian area.
- k. Site restoration. All streambanks, soils and vegetation disturbed by the project are cleaned up and restored as follows.
 - i. Restoration goal. The goal of site restoration is renewal of habitat access, water quality, production of habitat elements (such as large woody debris), channel conditions, flows, watershed conditions and other ecosystem processes that form and maintain productive fish habitats.
 - ii. Streambank shaping. Damaged streambanks must be restored to a natural slope, pattern and profile suitable for establishment of permanent woody vegetation.
 - iii. Revegetation. Areas requiring revegetation must be replanted before the first July 15 following construction with a diverse assemblage of species that are native to the project area or region, including grasses, forbs, shrubs and trees.
 - iv. Pesticides. No pesticide application is allowed, although mechanical or other methods may be used to control weeds and unwanted vegetation.
 - v. Fertilizer. No surface application of fertilizer may occur within 50 feet of any stream channel.
 - vi. Fencing. Fencing must be installed as necessary to prevent access to revegetated sites by livestock or unauthorized persons.

⁸ For purposes of this Opinion only, "large wood" means a tree, log, or rootwad big enough to dissipate stream energy associated with high flows, capture bedload, stabilize streambanks, influence channel characteristics, and otherwise support aquatic habitat function, given the slope and bankfull width of the stream in which the wood occurs. See, Oregon Department of Forestry and Oregon Department of Fish and Wildlife, *A Guide to Placing Large Wood in Streams*, May 1995 (www.odf.state.or.us/FP/RefLibrary/LargeWoodPlacemntGuide5-95.doc).

2. To implement reasonable and prudent measure #2, the UNF shall ensure that:
 - a. Fire camp location. Fire camps will be outside RHCAs whenever possible. Selection of camp sites should be prioritized to avoid RHCAs whenever possible.
 - b. Vehicle staging and refueling. Vehicles will be staged and refueled outside of RHCAs whenever possible. A minimum buffer of 150 feet from the active stream channel will be established if refueling in RHCAs must occur. For sites in RHCAs, a pollution and erosion control plan (as described in term and condition 1(e) of this Opinion) will be developed.
 - c. Soil compaction. Areas of compacted soil in RHCAs will be treated by using a golf course aerator or other similar treatment to reduce soil compaction.
 - d. Water withdrawal. If water is withdrawn from streams for activities at fire camps, the conservation measures developed for road maintenance on the UNF will be followed.
 - e. Revegetation. If riparian vegetation is removed or killed as a result of activities at fire camps, the areas will be replanted with native vegetation.
 - f. Sanitary facilities. Portable toilets and other facilities will be at least 150 feet from streams. If spills occur, contaminated soil will be removed.
 - g. Dust abatement use. Dust abatement chemicals, magnesium chloride and lignon sulfonate, will not be used within 50 feet of streams.
3. To implement reasonable and prudent measure #3, the MNF shall ensure that:
 - a. PACFISH compliance. Consistently implement grazing-related standards and guidelines listed in PACFISH to achieve RMOs regarding bank stability, water temperature, large woody material, lower bank angle, width/depth ratio and other aquatic habitat elements which may be affected by livestock grazing
 - b. Non-compliance with move triggers. If permittees are not successful in moving cattle when triggers are reached or approached, the land management agency, the MNF staff will conduct move trigger monitoring in the subsequent year.
 - c. Permittee training. Provide the necessary training for all permittees and range riders to monitor livestock use and pasture move “triggers” (stubble height, woody utilization, and bank damage), and to clearly understand objectives stated in the BA.
 - d. Maintenance of exclosure structures. Maintain and ensure proper operation of all exclosure structures, such as fences, designed to protect MCR steelhead spawning and rearing habitat.
 - e. Monitoring Report. Enter the following information into the IIT database and generate a report for NOAA Fisheries detailing livestock grazing activities on LAA allotments by January 1 of the following year. The following shall be included for each allotment: (1) Overview of proposed action and actual management (livestock numbers, on-off dates for each pasture, and strategy); (2) specific MNF implementation monitoring data, date, and location collected (stubble height, woody use, bank damage, unauthorized use, and fence

- maintenance); (3) specific permittee monitoring data; (4) review of management and compliance successes and failures and any transmittals/letters/actions addressed to/from permittees; (5) new habitat trend or MCR steelhead population data; (6) compliance with each pertinent term and condition contained in this Opinion; and (7) management recommendations for subsequent years.
- f. Site visits. Provide information, including allotment maps and spawning survey data, to be used by NOAA Fisheries Oregon Habitat Branch personnel during site visits to assess impacts of the grazing activities on MCR steelhead and their habitat. Site visits may occur at any time during the grazing season.
4. To implement reasonable and prudent measure #4, the UNF shall ensure that:
- a. Water and Septic System. A survey is carried out to determine what type of septic and water systems are present at each residence. An assessment of the effects these systems have on MCR steelhead and riparian habitat shall also occur at this point.
- b. Riparian Vegetation. When SUPs are issued for these residences, authorization for the removal of riparian vegetation is avoided unless that vegetation is causing a safety risk.

3. MAGNUSON-STEVENSON ACT

3.1 Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (MSA), as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), requires the inclusion of EFH descriptions in Federal fishery management plans. In addition, the MSA requires Federal agencies to consult with NOAA Fisheries on activities that would adversely affect EFH.

EFH means those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (MSA §3). For the purpose of interpreting the definition of EFH: “Waters” include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; “substrate” includes sediment, hard bottom, structures underlying the waters, and associated biological communities; “necessary” means the habitat required to support a sustainable fishery and the managed species’ contribution to a healthy ecosystem; and “spawning, breeding, feeding, or growth to maturity” covers a species’ full life cycle (50CFR600.110).

Section 305(b) of the MSA (16 U.S.C. 1855(b)) requires that:

- Federal agencies must consult with NOAA Fisheries on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH;

- NOAA Fisheries shall provide conservation recommendations for any Federal or state Activity that may adversely affect EFH;
- Federal agencies shall within 30 days after receiving conservation recommendations from NOAA Fisheries provide a detailed response in writing to NOAA Fisheries regarding the conservation recommendations. The response shall include a description of measures proposed by the agency for avoiding, mitigating or offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with the conservation recommendations of NOAA Fisheries, the Federal agency shall explain its reason for not following the recommendations.

The MSA requires consultation for all actions that may adversely affect EFH, and does not distinguish between actions within EFH and actions outside EFH. Any reasonable attempt to encourage the conservation of EFH must take into account actions that occur outside EFH, such as upstream and upslope activities, that may have an adverse effect on EFH. Therefore, EFH consultation with NOAA Fisheries is required by Federal agencies undertaking, permitting or funding activities that may adversely affect EFH, regardless of its location.

3.2 Identification of EFH

The Pacific Fisheries Management Council (PFMC) has designated EFH for three species of Pacific salmon: Chinook (*Oncorhynchus tshawytscha*); coho (*O. kisutch*); and Puget Sound pink salmon (*O. gorbuscha*) (PFMC 1999). Freshwater EFH for Pacific salmon includes all those streams, lakes, ponds, wetlands, and other waterbodies currently, or historically accessible to salmon in Washington, Oregon, Idaho, and California, except areas upstream of certain impassable man-made barriers (as identified by the PFMC), and longstanding, naturally-impassable barriers (*i.e.*, natural waterfalls in existence for several hundred years). Detailed descriptions and identifications of EFH for salmon are found in Appendix A to Amendment 14 to the *Pacific Coast Salmon Plan* (PFMC 1999). Assessment of potential adverse effects to these species' EFH from the proposed action is based on this information.

3.3 Proposed Actions

The proposed action is detailed above in section 1.2 of the ESA portion of this Opinion. The action area includes the NFJDR subbasin. This area has been designated as EFH for various life stages of chinook salmon.

3.4 Effects of Proposed Action

As described in detail in the ESA portion of this consultation, the proposed activities may result in detrimental adverse effects to a variety of habitat elements.

3.5 Conclusion

NOAA Fisheries believes that the proposed action will adversely affect the EFH for chinook salmon.

3.6 EFH Conservation Recommendations

Pursuant to section 305(b)(4)(A) of the MSA, NOAA Fisheries is required to provide EFH conservation recommendations for any Federal or state agency action that would adversely affect EFH. In addition to conservation measures proposed for the project by the UNF, WWNF, and MNF, all of the reasonable and prudent measures and the terms and conditions contained in sections 2.2.3 and 2.2.4 (respectively) of the ESA portion of this Opinion are applicable to salmon EFH. Therefore, NOAA Fisheries incorporates each of those measures here as EFH conservation recommendations.

3.7 Statutory Response Requirement

The MSA (section 305(b)) and 50 CFR 600.920(j) requires the UNF, WWNF, and MNF to provide a written response to NOAA Fisheries' EFH conservation recommendations within 30 days of its receipt of this letter. The response must include a description of measures proposed to avoid, mitigate, or offset the adverse impacts of the activity on EFH. If the response is inconsistent with NOAA Fisheries' conservation recommendations, the reasons for not implementing the UNF shall explain its reasons for not following the recommendations.

3.8 Supplemental Consultation

The UNF must reinitiate EFH consultation with NOAA Fisheries if either the action is substantially revised or new information becomes available that affects the basis for NOAA Fisheries' EFH conservation recommendations (50 CFR 600.920).

4. LITERATURE CITED

Section 7(a)(2) of the ESA requires biological opinions to be based on "the best scientific and commercial data available." This section identifies the data used in developing this Opinion in addition to the BA and additional information requested by NOAA Fisheries and provided by the UNF, WWNF, and MNF.

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